

Exhibit 20

1 UNITED STATES DISTRICT COURT
2 SOUTHERN DISTRICT OF NEW YORK

3 IN RE: ACETAMINOPHEN -) MDL No. 3043
4 ASD-ADHD PRODUCTS)
5 LIABILITY LITIGATION) Case No.
6) 1:22-md-03043-DLC
7 THIS DOCUMENT RELATES TO:)
8) JUDGE DENISE
9 All Cases, 1:22-md-03043) COTE

10
11 MONDAY, AUGUST 14, 2023

12 CONFIDENTIAL - PURSUANT TO PROTECTIVE ORDER

13 - - -

14 Videotaped deposition of Andrea
15 Baccarelli, MD, Ph.D., held at the offices of
16 Lanier Law Firm, 126 East 56th Street,
17 New York, New York, commencing at 8:32 a.m.
18 Eastern, on the above date, before Carrie A.
19 Campbell, Registered Diplomate Reporter,
20 Certified Realtime Reporter, Illinois,
21 California & Texas Certified Shorthand
22 Reporter, Missouri, Kansas, Louisiana & New
23 Jersey Certified Court Reporter.

24 - - -

25 GOLKOW LITIGATION SERVICES
877.370.DEPS
deps@golkow.com

Page 2

1 APPEARANCES:

2

3 KELLER POSTMAN LLC

4 BY: J.T. SNIDOW (VIA ZOOM)

5 j.snidow@kellerpostman.com

6 ASHLEY C. KELLER (VIA ZOOM)

7 ashley.keller@kellerpostman.com

8 REBECCA KING (VIA ZOOM)

9 rebecca.king@kellerpostman.com

10 ASHLEY BARRIERE (VIA ZOOM)

11 ashley.barriere@kellerpostman.com

12 AMANDA HUNT (VIA ZOOM)

13 amanda.hunt@kellerpostman.com

14 ROSIE ROMANO (VIA ZOOM)

15 rosie.romano@kellerpostman.com

16 LAUREN SCHULTZ (VIA ZOOM)

17 lauren.schultz@kellerpostman.com

18 150 North Riverside Plaza, Suite 4100

19 Chicago, Illinois 60606

20 (312) 741-5220

21 and

22 TRACEY & FOX

23 BY: SEAN P. TRACEY (VIA ZOOM)

24 stracey@traceylawfirm.com

25 440 Louisiana Street, Suite 1901

Houston, Texas 77002

(713) 495-2333

and

THE LANIER LAW FIRM, PLLC

BY: EVAN M. JANUSH (VIA ZOOM)

evan.janush@lanierlawfirm.com

CATHERINE HEACOX (VIA ZOOM)

catherine.heacox@lanierlawfirm.com

LEILA AYACHI (VIA ZOOM)

leila.ayachi@lanierlawfirm.com

126 East 56th Street, 6th Floor

New York, New York 11758

(212) 421-2800

Page 3

1 and

2 WATTS GUERRA LLC

3 BY: MIKAL C. WATTS (VIA ZOOM)

4 mcwatts@wattsguerra.com

5 HAILEY WATTS

6 hwatts@wattsguerra.com

7 RUSS ABNEY

8 rabney@wattsguerra.com

9 Millennium Park Plaza RFO

10 Suite 410, C112

11 Guaynabo, Puerto Rico 00966

12 (210) 447-0500

13 and

14 HOLWELL SHUSTER & GOLDBERG LLP

15 BY: EILEEN MONAGHAN DELUCIA (VIA ZOOM)

16 edelucia@hsgllp.com

17 DANIEL M. SULLIVAN (VIA ZOOM)

18 dsullivan@hsgllp.com

19 425 Lexington Avenue

20 New York, New York 10017

21 (646) 837-5151

22 and

23 WAGSTAFF & CARTMELL

24 BY: LINDSEY SCARCELLO (VIA ZOOM)

25 lscarcello@wcllp.com

4740 Grand Avenue, Suite 300

Kansas City, Missouri 64112

(816) 701-1100

and

THE CARLSON LAW FIRM

BY: EMILY MARLOWE (VIA ZOOM)

emarlowe@carlsonattorneys.com

1717 North Interstate Highway 35, Suite 305

Round Rock, Texas 78664

(512) 671-7277

Page 4

1 and

2 KRAUSE & KINSMAN

3 BY: TRICIA CAMPBELL (VIA ZOOM)

4 tcampbell@krauseandkinsman.com

5 4717 Grand Avenue, Suite 300

6 Kansas City, Missouri 64112

7 (816) 200-2900

8 and

9 HOLLAND LAW FIRM

10 BY: MICHAEL DOWD (VIA ZOOM)

11 mdowd@hollandtriallawyers.com

12 211 North Broadway, Suite 2625

13 St. Louis, Missouri 63102

14 (314) 241-8111

15 and

16 DOVEL & LUNER

17 BY: GREG DOVEL (VIA ZOOM)

18 greg@dovel.com

19 JULIEN ADAMS (VIA ZOOM)

20 julien@dovel.com

21 201 Santa Monica Boulevard, Suite 600

22 Santa Monica, California 90401

23 (310) 656-7066

24 and

25 BEASLEY, ALLEN, CROW, METHVIN,

PORTIS & MILES

BY: W. ROGER SMITH, III (VIA ZOOM)

roger.smith@beasleyallen.com

218 Commerce Street

Montgomery, Alabama 36104

(800) 898-2034

and

Page 5

1 KERSHAW TALLEY BARLOW

2 BY: WILLIAM J. LEE (VIA ZOOM)

3 VINHT T. LE (VIA ZOOM)

4 401 Watt Avenue, Suite 1

5 Sacramento, California 95864-7273

6 (916) 520-6639

7 and

8 COOPER LAW PARTNERS

9 BY: DAVIS COOPER (VIA ZOOM)

10 davis@cooperlawpartners.com

11 999 Vanderbilt Beach Road, Suite 200

12 Naples, Florida 34108

13 (800) 872-3500

14 Counsel for Plaintiffs

15 BARNES & THORNBURG LLP

16 BY: JAMES F. MURDICA

17 jmurdica@btlaw.com

18 SARAH E. JOHNSTON

19 sjohnston@btlaw.com

20 MITCHELL CHARCHALIS

21 mcharchalis@btlaw.com

22 KRISTEN L. RICHER (VIA ZOOM)

23 kricher@btlaw.com

24 2029 Century Park East, Suite 300

25 Los Angeles, California 90067-2904

(310) 284-3880

and

BARNES & THORNBURG LLP

BY: DEANNA LEE (VIA ZOOM)

dlee@btlaw.com

555 12th Street, N.W., Suite 1200

Washington, DC 20004-1275

(202) 289-1313

and

Page 6

1 BARNES & THORNBURG LLP
 2 BY: JESSICA BRENNAN (VIA ZOOM)
 3 jessica.brennan@btlaw.com
 4 67 East Park Place, Suite 500
 5 Morristown, New Jersey 07960
 6 (973) 775-6101
 7 Counsel for Johnson & Johnson
 8 Consumer, Inc.

6 BARNES & THORNBURG LLP
 7 BY: NADINE KOHANE (VIA ZOOM)
 8 nkohane@btlaw.com
 9 390 Madison Avenue, 12th Floor
 10 New York, New York 10017
 11 (646) 746-2000
 12 Counsel for CVS Pharmacy, Inc., CVS
 13 Health Corporation, Walgreen Co.,
 14 Walgreens Co., and Walgreens Boots
 15 Alliance, Inc.

13 BARNES & THORNBURG LLP
 14 BY: SANDRA M. KO (VIA ZOOM)
 15 sko@btlaw.com
 16 555 12th Street N.W., Suite 1200
 17 Washington, DC 20004-1275
 18 (202) 289-1313
 19 Counsel for Costco Wholesale
 20 Corporation

18 ARNOLD & PORTER, LLP
 19 BY: RAYNE ELLIS (VIA ZOOM)
 20 rayne.ellis@arnoldporter.com
 21 MITCHELL STERN (VIA ZOOM)
 22 mitchell.stern@arnoldporter.com
 23 250 West 55th Street
 24 New York, New York 10019
 25 (212) 836-8000
 Counsel for Dollar Tree Inc.,
 7-Eleven, and Family Dollar, Inc.

Page 8

1 SMITH SOVIK KENDRICK & SUGNET
 2 BY: GARDAR OLAFSSON (VIA ZOOM)
 3 golafsson@smithsovik.com
 4 250 South Clinton Street, Suite 600
 5 Syracuse, New York 13202
 6 (315) 474-2911
 7 Counsel for Rite Aid

6 STONE DEAN LLP
 7 BY: JOSEPH A. LARA (VIA ZOOM)
 8 jlara@stonedeanlaw.com
 9 21052 Oxnard Street
 10 Woodland Hills, California 91367
 11 (818) 999-2232
 12 Counsel for The Kroger Co.

11 HAIGHT BROWN & BONESTEEL LLP
 12 BY: KATIE M. TRINH (VIA ZOOM)
 13 ktrinh@hbblaw.com
 14 555 South Flower Street, 55th Floor
 15 Los Angeles, California 90071
 16 (213) 542-8000
 17 Counsel for Big Lots Stores-PNS, LLC

16 ALSO PRESENT (VIA ZOOM):
 17 JACKIE KOSTICK, King & Spalding
 18 LAURA SHANNON, summer associate, Keller
 19 Postman LLC

20 VIDEOGRAPHER:
 21 DANNY ORTEGA,
 22 Golkow Litigation Services
 23 ---
 24
 25

Page 7

1 KING & SPALDING LLP
 2 BY: EVA CANAAN (VIA ZOOM)
 3 ecanaan@kslaw.com
 4 1185 Avenue of the Americas
 5 New York, New York 10036
 6 (212) 556-2100

5 and

6 KING & SPALDING LLP
 7 BY: LUKE BOSSO (VIA ZOOM)
 8 lbosso@kslaw.com
 9 1700 Pennsylvania Avenue NW
 10 Washington, DC 20006
 11 (202) 737-0500
 12 Counsel for Walmart Inc., and
 13 Wal-Mart Stores, Inc.

12 MORRISON & FOERSTER LLP
 13 BY: LINDSEY CAIN (VIA ZOOM)
 14 lcain@mfo.com
 15 ASHLEY E. QUINN (VIA ZOOM)
 16 aquinn@mfo.com
 17 250 West 55th Street
 18 New York, New York 10019-9601
 19 (212) 468-8000
 20 Counsel for Target Corporation

18 DUANE MORRIS LLP
 19 BY: ANNE A. GRUNER (VIA ZOOM)
 20 agruner@duanemorris.com
 21 30 South 17th Street
 22 Philadelphia, Pennsylvania 19103
 23 (215) 979-1000
 24 Counsel for Dollar General, Dollar
 25 General Corporation

Page 9

1 INDEX
 2 PAGE

3 APPEARANCES..... 2
 4 EXAMINATIONS

5 BY MR. MURDICA..... 14
 6 BY MR. SNIDOW..... 478
 7 BY MR. MURDICA..... 483

9 EXHIBITS

No.	Description	Page
89	E-mail(s) BACCARELLI_014239 - BACCARELLI_014242	108
90	"Association Between Meconium Acetaminophen and Childhood Neurocognitive Development in GESTE, a Canadian Cohort Study," Laue, et al.	169
91	E-mail(s) BACCARELLI_000427 - BACCARELLI_000431	174
92	"Meconium: A Novel Biomarker of In Utero Exposure to Acetaminophen and Caffeine," Laue, et al.	213
93	Draft of "Association of maternal acetaminophen usage during pregnancy and childhood neurocognitive development in a Canadian cohort study" BACCARELLI_000298 - BACCARELLI_000309	245
94	Printout of Andrea Baccarelli Twitter tweet	283

Page 10			Page 12			
1	95	Use of Acetaminophen (Paracetamol, Tylenol) During Pregnancy and Association to Infant Neurodevelopmental Outcomes chart of studies	289	1	110 "Acetaminophen use in pregnancy: Examination prevalence, timing and indication of use in a prospective birth cohort," Bandoli, et al.	438
2				2		
3				3		
4	96	Dr. Baccarelli invoices and privilege log	293	4	111 E-mail(s), BACCARELLI_001360 - BACCARELLI_001364	448
5				5		
6	97	"Monitoring of prenatal exposure to organic and inorganic contaminants using meconium from an Eastern Canada cohort," Cassoulet, et al.	296	6	112 "Acetaminophen use in pregnancy and neurodevelopment: Attention function and autism spectrum symptoms," Avella-Garcia, et al.	450
7				7		
8				8		
9	98	Redline document of "Monitoring of prenatal exposure to organic and inorganic contaminants using meconium from an Eastern Canada cohort," BACCARELLI_000464 - BACCARELLI_000482	297	9	113 "Maternal Use of Acetaminophen during Pregnancy and Risk of Autism Spectrum Disorders in Childhood: A Danish National Birth Cohort Study," Liew, et al.	467
10				10		
11				11		
12				12	114 Binders of materials brought to the deposition by Dr. Baccarelli	487
13	99	"The Causal Relationship Between Prenatal Acetaminophen Use, Neurodevelopmental Disorders (NDD), Attention-Deficit/Hyperactivity Disorder (ADHD), and Autism Spectrum Disorder (ASD)," Expert Report of Andrea Baccarelli, MD, Ph.D., MPH	347	13	115 Laue PowerPoint presentation slides	487
14				14		
15				15	(Exhibits attached to the deposition.)	
16				16	(Exhibits 96 and 115 to be provided by plaintiffs' counsel at a later date.)	
17	100	"Association of Prenatal Acetaminophen Exposure Measured in Meconium With Risk Of Attention-Deficit/Hyperactivity Disorder Mediated by Frontoparietal Network Brain Connectivity," Baker, et al.	348	17		
18				18		
19				19	CERTIFICATE.....	488
20				20	ACKNOWLEDGMENT OF DEPONENT.....	490
21	101	Online version of "Association of Prenatal Acetaminophen Exposure Measured in Meconium With Risk Of Attention-Deficit/Hyperactivity Disorder Mediated by Frontoparietal Network Brain Connectivity," Baker, et al.	354	21	ERRATA.....	491
22				22	LAWYER'S NOTES.....	492
23				23		
24				24		
25				25		

Page 11			Page 13			
1	102	Supplementary Online Content	367	1	VIDEOGRAPHER: We are now on	
2	103	Draft analysis plan: Association between meconium acetaminophen and attention deficit	374	2	the record. My name is Danny Ortega,	
3				3	and I'm the legal videographer for	
4				4	Golkow Litigation Services.	
5	104	Draft of "Association of Prenatal Acetaminophen Exposure Measured in Meconium With Risk of Attention-Deficit Hyperactivity Disorder: Mediation by Frontal Parietal Network Brain Connectivity," BACCARELLI_001185 - BACCARELLI_001209	384	5	Today's date is August 14,	
6				6	2023, and the time is 8:32 a.m.	
7				7	This video deposition is being	
8				8	held at 126 East 56th Street,	
9				9	New York, New York, in the matter of	
10	105	Report of Anne McTiernan, MD, Ph.D., to the House of Representatives Subcommittee on Economic and Consumer Policy, March 12, 2019	393	10	acetaminophen (Tylenol) ASD-ADHD	
11				11	Products Liability Litigation.	
12				12	The deponent today is Andrea	
13	106	"Association of Cord Plasma Biomarkers of In Utero Acetaminophen Exposure With Risk of Attention-Deficit/Hyperactivity Disorder and Autism Spectrum Disorder in Childhood," Ji, et al.	393	13	Baccarelli.	
14				14	All counsel will be noted on	
15				15	the stenographic record.	
16				16	The court reporter today is	
17	107	E-mail(s), BACCARELLI_014576 - BACCARELLI_014580	405	17	Carrie Campbell and will now swear in	
18				18	the witness.	
19				19		
20	108	"Association of Prenatal Acetaminophen Exposure Measured in Meconium With Adverse Birth Outcomes in a Canadian Birth Cohort," Baker, et al.	420	20	ANDREA BACCARELLI, MD, Ph.D.,	
21				21	of lawful age, having been first duly sworn	
22	109	"Sex-specific neurobehavioral and prefrontal cortex gene expression alterations following developmental acetaminophen exposure in mice," Baker, et al.	428	22	to tell the truth, the whole truth and	
23				23	nothing but the truth, deposes and says on	
24				24	behalf of the Defendant Johnson & Johnson, as	
25				25	follows:	

<p>Page 14</p> <p>1 DIRECT EXAMINATION</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. Good morning, Doctor.</p> <p>4 A. Good morning.</p> <p>5 Q. How do you prefer that I</p> <p>6 address you?</p> <p>7 A. Dr. Baccarelli is good.</p> <p>8 Q. Thank you, Dr. Baccarelli.</p> <p>9 Before we begin, I just want to</p> <p>10 put on the record that late Friday, counsel</p> <p>11 for the plaintiffs, Mr. Snidow --</p> <p>12 MR. MURDICA: Did I pronounce</p> <p>13 that right, J.J..</p> <p>14 MR. SNIDOW: Snidow.</p> <p>15 QUESTIONS BY MR. MURDICA:</p> <p>16 Q. Snidow.</p> <p>17 -- filed a motion for pro hac</p> <p>18 admission in this case. I have not yet had a</p> <p>19 chance to confer with the client or do any</p> <p>20 research about this, but there may exist a</p> <p>21 good faith basis to oppose the pro hac.</p> <p>22 I'm comfortable with going</p> <p>23 forward with Mr. Snidow defending you today,</p> <p>24 provided we have an agreement that any such</p> <p>25 opposition, if there is a credible basis for</p>	<p>Page 16</p> <p>1 A. Correct. Didn't change the</p> <p>2 substance of my conclusion.</p> <p>3 Q. Okay. And then you also</p> <p>4 submitted a rebuttal report about two weeks</p> <p>5 ago, right?</p> <p>6 A. Yes, that is correct.</p> <p>7 Q. Okay. Are there any opinions</p> <p>8 you hold today that are not contained in</p> <p>9 those reports?</p> <p>10 A. No, there is not -- no opinions</p> <p>11 that I need to add.</p> <p>12 Q. Okay. Before we begin, is</p> <p>13 there anything you want to go on the record</p> <p>14 to change right now in -- contained in those</p> <p>15 reports?</p> <p>16 A. There are small things that I</p> <p>17 found that I might need to correct, but I can</p> <p>18 tell you what they are.</p> <p>19 Q. Sure.</p> <p>20 Are any of them substantive?</p> <p>21 A. No.</p> <p>22 A lot of small things, the way</p> <p>23 you look at 100 pages, you find all the</p> <p>24 times.</p> <p>25 For instance, I realized that</p>
<p>Page 15</p> <p>1 it, would not be waived.</p> <p>2 And if, on direct examination,</p> <p>3 there's any examination with respect to my</p> <p>4 client, we may have to take that question by</p> <p>5 question.</p> <p>6 MR. MURDICA: Okay. That's</p> <p>7 fine. Thanks, Jim.</p> <p>8 Dr. Baccarelli, you can ignore</p> <p>9 all that.</p> <p>10 THE WITNESS: Yes.</p> <p>11 MR. MURDICA: Yes, not relevant</p> <p>12 to you, Dr. Baccarelli.</p> <p>13 MR. SNIDOW: Please do.</p> <p>14 THE WITNESS: Okay.</p> <p>15 QUESTIONS BY MR. MURDICA:</p> <p>16 Q. Good morning, Dr. Baccarelli.</p> <p>17 My name is Jim Murdica, and I represent the</p> <p>18 defendants.</p> <p>19 Dr. Baccarelli, as you sit here</p> <p>20 today, you have offered a written opinion in</p> <p>21 an initial report, correct?</p> <p>22 A. Yes.</p> <p>23 Q. You offered an amended report</p> <p>24 that you said was substantively the same as</p> <p>25 your initial report, right?</p>	<p>Page 17</p> <p>1 in my tables I said that Alemany was</p> <p>2 presenting new results for two out of six</p> <p>3 cohorts instead -- sorry, for four out of six</p> <p>4 cohorts. Instead, there are three out of six</p> <p>5 cohorts that are new.</p> <p>6 There's a paper Alemany 2021.</p> <p>7 And I said that Liew 2014 in my</p> <p>8 table, page 8 of 21, was from Norway.</p> <p>9 Instead, it is from Denmark.</p> <p>10 These are some of the things I</p> <p>11 have. I -- all the rest is about right. If</p> <p>12 there is anything that I find different, I'll</p> <p>13 make sure to tell you.</p> <p>14 Q. Okay. Thank you,</p> <p>15 Dr. Baccarelli.</p> <p>16 Dr. Baccarelli, when did you</p> <p>17 first begin investigating an association</p> <p>18 between acetaminophen exposure in pregnancy</p> <p>19 and neurodevelopmental outcomes?</p> <p>20 A. Acetaminophen and</p> <p>21 neurodevelopmental outcomes, correct?</p> <p>22 In -- we started to work on</p> <p>23 this, my team and I, in around 2019.</p> <p>24 Q. And --</p> <p>25 A. 2018, actually. Yeah.</p>

<p style="text-align: right;">Page 18</p> <p>1 Q. 2018 is the first time you</p> <p>2 started investigating acetaminophen exposure</p> <p>3 during pregnancy and neurodevelopmental</p> <p>4 outcomes, correct?</p> <p>5 A. Correct. Correct.</p> <p>6 Q. Do you remember when in 2018?</p> <p>7 A. No.</p> <p>8 Q. Okay. By the way, are you a</p> <p>9 neurologist?</p> <p>10 A. Oh, no. I'm not a neurologist.</p> <p>11 I'm an epidemiologist. I publish about 300</p> <p>12 papers on the effects of chemical intoxicants</p> <p>13 on the child prenatally and during -- and</p> <p>14 during childhood.</p> <p>15 So I clearly -- I clearly --</p> <p>16 I'm a physician, but I don't work as a</p> <p>17 neurologist.</p> <p>18 Q. Neurodevelopmental outcomes are</p> <p>19 not themselves your expertise; is that right?</p> <p>20 MR. SNIDOW: Objection to the</p> <p>21 form.</p> <p>22 Dr. Baccarelli, you can -- you</p> <p>23 can answer.</p> <p>24 THE WITNESS: That is</p> <p>25 completely incorrect.</p>	<p style="text-align: right;">Page 20</p> <p>1 during pregnancy was associated with adverse</p> <p>2 neurodevelopmental outcomes?</p> <p>3 MR. SNIDOW: Objection to the</p> <p>4 form.</p> <p>5 Dr. Baccarelli, you can answer.</p> <p>6 THE WITNESS: At that time, I</p> <p>7 didn't believe that acetaminophen was</p> <p>8 associated with the outcome. I</p> <p>9 believe it was worth investigating.</p> <p>10 The way went -- my team went to</p> <p>11 me, came to me, particularly Hannah</p> <p>12 Laue and then Brennan Baker, and they</p> <p>13 say there is some papers that show</p> <p>14 that acetaminophen may be associated</p> <p>15 with neurodevelopmental outcomes. I</p> <p>16 think should we should look into it.</p> <p>17 And I say, okay, let's look</p> <p>18 into it. But in my mind, it was no</p> <p>19 way this -- we find everything. I was</p> <p>20 pretty sure we find absolutely</p> <p>21 nothing.</p> <p>22 I mean, as a physician, I</p> <p>23 thought Tylenol is perfectly fine.</p> <p>24 Everyone takes it. Everyone</p> <p>25 is that -- that is what I thought back</p>
<p style="text-align: right;">Page 19</p> <p>1 I work extensively on</p> <p>2 neurodevelopmental outcomes. I</p> <p>3 published -- as an epidemiologist, I'm</p> <p>4 very well qualified to look at</p> <p>5 neurodevelopmental outcomes.</p> <p>6 QUESTIONS BY MR. MURDICA:</p> <p>7 Q. Okay. Was there ever a time</p> <p>8 when you held the opinion that acetaminophen</p> <p>9 exposure during pregnancy was not associated</p> <p>10 with adverse neurodevelopmental outcomes?</p> <p>11 A. Oh, absolutely. I was</p> <p>12 completely convinced it was not.</p> <p>13 Q. Okay.</p> <p>14 A. I was taught like that in</p> <p>15 medical school. I was taught Tylenol is the</p> <p>16 only drug you can give to women during</p> <p>17 pregnancy. So I grew up believing that as a</p> <p>18 truth that no one can doubt.</p> <p>19 Q. And, Dr. Baccarelli, you just</p> <p>20 testified you started looking into it as a --</p> <p>21 as a scientist in 2018, correct?</p> <p>22 A. That is correct.</p> <p>23 Q. Okay. And at the time that you</p> <p>24 started looking into it as a scientist, did</p> <p>25 you believe that acetaminophen exposure</p>	<p style="text-align: right;">Page 21</p> <p>1 then. I was completely wrong.</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. Okay. And when Hannah came to</p> <p>4 you, she was talking about ADD or ADHD</p> <p>5 specifically, not just all neurodevelopmental</p> <p>6 outcomes, correct?</p> <p>7 A. Hannah was talking about ADD,</p> <p>8 ADHD and neurodevelopmental outcomes. It</p> <p>9 was -- at the time, we were -- when Hannah</p> <p>10 Laue came to me, she approached me about</p> <p>11 looking at the intelligence. So we were</p> <p>12 talking about the intelligence at that time.</p> <p>13 Q. Okay. And you -- she did, in</p> <p>14 fact, look at data from meconium and tried to</p> <p>15 connect acetaminophen exposure to an</p> <p>16 intelligence outcome, right?</p> <p>17 MR. SNIDOW: Objection to the</p> <p>18 form.</p> <p>19 And, Jim, if you're talking</p> <p>20 about a particular study, I do ask</p> <p>21 that you show it to him.</p> <p>22 If you're talking about</p> <p>23 conversations, that's fine, but it</p> <p>24 seems like you're mentioning a study.</p> <p>25 MR. MURDICA: So we're not</p>

<p style="text-align: right;">Page 22</p> <p>1 going to be doing that today. I'm 2 going to ask my questions. I will 3 conduct my examination however I want 4 within the rules, and I'm not going to 5 waste my time listening to you talk 6 about things that are unrelated to my 7 examination. 8 So, particularly given the 9 status of your pro hac, we're not 10 going to do this today. 11 MR. SNIDOW: That has nothing 12 to do with anything. If you want to 13 show him -- you're talking about data. 14 It seems like you're talking about a 15 study, and I ask you show him the 16 study. 17 MR. MURDICA: Mr. Snidow, I 18 will show whatever I want whenever I 19 what it, and this is going to be the 20 last time we have this conversation 21 today. 22 QUESTIONS BY MR. MURDICA: 23 Q. Can you answer my question, 24 Dr. Baccarelli? 25 A. Can you rephrase the question,</p>	<p style="text-align: right;">Page 24</p> <p>1 to look at, but I -- I'm not sure we will 2 find anything. 3 So as a scientist, I'm driven 4 by data. The data that I was aware of at 5 that time was part of the literature, and I 6 was really driven by my bias as a physician 7 of thinking that Tylenol was great. Was 8 great. I just trust in my teachers in 9 medical school more than the evidence, and it 10 was a mistake. 11 Q. Do you think you answered my 12 question? 13 MR. SNIDOW: Objection to the 14 form. 15 Dr. Baccarelli -- 16 Dr. Baccarelli, you can answer it, but 17 if you want him to rephrase, go ahead 18 and ask. 19 THE WITNESS: I do, but if -- 20 if you think I didn't, please tell me 21 what part I didn't -- I didn't answer. 22 QUESTIONS BY MR. MURDICA: 23 Q. Dr. Baccarelli, do you recall 24 whether Ms. Laue -- 25 Is it Dr. Laue?</p>
<p style="text-align: right;">Page 23</p> <p>1 please? 2 Q. Sure. 3 MR. MURDICA: Do you mind 4 reading it back? 5 (Court Reporter read back 6 question.) 7 THE WITNESS: So she didn't try 8 to connect. As we -- as scientists, 9 we always look objectively at the 10 evidence. We don't try to connect 11 anything. 12 So we are just studying the 13 association between -- in that case 14 between prenatal acetaminophen and a 15 measurement, one measurement, of 16 intelligence. 17 QUESTIONS BY MR. MURDICA: 18 Q. And at the time, 19 Dr. Baccarelli, like you just said, you 20 didn't know if there was an association or 21 not, right? 22 A. At the time, I had an opinion 23 that -- that I was completely agnostic to 24 the -- to the fact. Without -- my first 25 reaction to Hannah was, that is interesting</p>	<p style="text-align: right;">Page 25</p> <p>1 A. Dr. Laue. 2 Q. -- whether Dr. Laue found 3 anything with respect to acetaminophen and 4 neurodevelopmental outcomes in that -- when 5 she looked at meconium? 6 A. It -- 7 MR. SNIDOW: Objection -- I'm 8 sorry, Dr. Baccarelli. Just pause for 9 a second. 10 Objection to form. 11 Again, it now sounds like you 12 really are talking about a study, and 13 I ask that if you're going to do that, 14 you show it to him. 15 MR. MURDICA: I'm going to stop 16 the deposition if you do that one more 17 time. I asked if he recalled 18 anything. 19 I'm serious. I'm very serious 20 about this. We're not doing this 21 again. You're interrupting my 22 examination. It actually is bothering 23 me, and it's not proper. 24 So are you going to tell me 25 you're going to stop or not?</p>

<p style="text-align: right;">Page 26</p> <p>1 MR. SNIDOW: I think, Jim, 2 frankly, anytime you want to ask him 3 about a study, I'm going to ask that 4 you do it. 5 MR. MURDICA: Okay. Let's off 6 the record. 7 VIDEOGRAPHER: The time right 8 now is 8:43 a.m. We are off the 9 record. 10 (Off the record at 8:43 a.m.) 11 VIDEOGRAPHER: The time right 12 now is 8:47 a.m. We are back on the 13 record. 14 MR. SNIDOW: Okay. Mr. Murdica 15 and I have discussed, and we decided 16 that I'm going to be entitled to a 17 standing objection that I won't make 18 every time that -- against the 19 opposing counsel asking the witness 20 questions about a particular study 21 without showing it to him. 22 Are you okay with that, 23 Mr. Murdica? 24 MR. MURDICA: I said you could 25 state it on the record, and I'm going</p>	<p style="text-align: right;">Page 28</p> <p>1 THE WITNESS: That's okay. 2 QUESTIONS BY MR. MURDICA: 3 Q. Dr. Baccarelli, before the 4 interruption, we were discussing Dr. Hannah 5 Laue's investigation of acetaminophen 6 exposure in meconium -- 7 A. Uh-huh. 8 Q. -- in 2019. 9 Do you recall that question? 10 A. I do. 11 Q. Okay. And sitting here today, 12 do you recall whether or not Dr. Laue found 13 anything with respect to acetaminophen 14 exposure in that study? 15 A. That paper is one of the very 16 few that shows no association between 17 acetaminophen and intelligence or any other 18 neurodevelopmental outcomes. It's one of the 19 outliers in the literature. 20 And part of it is because it 21 looks at intelligence and -- one scale of 22 intelligence and doesn't look at the -- at 23 the other outcomes. 24 And also, it's a small study. 25 It's one -- 118 subjects, something that at</p>
<p style="text-align: right;">Page 27</p> <p>1 to state that Document Number 433 on 2 the MDL docket is the deposition 3 protocol for expert depositions. And 4 paragraph 13 clearly shows that you 5 violated the protocol multiple times 6 this morning, which is why I said I 7 wouldn't continue if you continued 8 doing that. 9 So you can say whatever you 10 want right now. From this point on, 11 the only thing you will say is that 12 you object to form, or we'll follow 13 paragraph 14, which is to call 14 Judge Cote. 15 MR. SNIDOW: Okay. So but 16 you're fine with my standing 17 objection? 18 MR. MURDICA: Yes. 19 MR. SNIDOW: Thank you. 20 QUESTIONS BY MR. MURDICA: 21 Q. Dr. Baccarelli, are you ready 22 to proceed? 23 A. Absolutely. 24 MR. SNIDOW: And again, Doctor, 25 you can ignore all of that.</p>	<p style="text-align: right;">Page 29</p> <p>1 the time perhaps I didn't appreciate, but now 2 when I look at the literature later on, 3 clearly we are comparing this study to others 4 that have hundreds of children, some have 5 thousands, some have 50,000, 60,000 children. 6 So this study is very possible 7 to be a false negative. 8 Q. Dr. Baccarelli, did you say 9 there were 118 children in that? 10 A. Correct. 11 Q. Okay. Now, you don't have that 12 study in front of you right now, right? 13 A. I do. It's here. 14 Q. You do? 15 A. Yes. 16 Q. Okay. What are you looking at? 17 A. Laue. 18 Q. Oh, you have the study in front 19 of you. 20 A. And 118. 21 Q. Okay. What do you -- what do 22 you have in front of you right now? 23 A. Is the study of Laue? 24 Q. No, no, I mean -- 25 A. The abstract.</p>

Page 30

1 Q. You have several binders
 2 sitting in front of you, right? Two binders?
 3 A. Yeah. One is my report, and
 4 one is some literature that is in my report.
 5 Q. Okay. Can I take a look at the
 6 literature binder?
 7 A. Absolutely.
 8 Q. That way I know what you have.
 9 Thanks.
 10 Now, I see one thing that you
 11 have here is Masarwa, right?
 12 A. Uh-huh.
 13 Q. And is that in your report?
 14 A. Of course.
 15 Q. Okay. And right before
 16 Masarwa, is that a -- is that a summary that
 17 you created?
 18 A. Yes.
 19 Q. Okay.
 20 A. Absolutely.
 21 Q. Is that -- is that summary in
 22 your report or is that something new?
 23 A. It's a summary of a study by
 24 Alemany, which is in my report. It's nothing
 25 that is -- it's just notes to remind me what

Page 31

1 Alemany says.
 2 Q. Your notes?
 3 A. Correct.
 4 Q. Okay. Dr. Baccarelli, did you
 5 review any deposition transcripts of
 6 plaintiffs' experts in this case?
 7 A. I reviewed Cabrera's.
 8 Q. Okay. Did you review
 9 Dr. Hollander's?
 10 A. No.
 11 Q. You say in your report and in
 12 your rebuttal report that you rely on
 13 Dr. Hollander, correct?
 14 A. I didn't say that. I said that
 15 I read Dr. Hollander's, and I'm also -- also
 16 using their knowledge and also reporting his
 17 knowledge.
 18 Q. Okay. So you're not relying on
 19 Dr. Hollander for anything here?
 20 A. If there is anything that I am
 21 relying on, please let me know.
 22 Q. Well, you're saying right
 23 now -- I mean, this is your chance. You're
 24 under oath right now, Dr. Baccarelli.
 25 A. Correct.

Page 32

1 Q. You're not relying on
 2 Dr. Hollander, correct?
 3 MR. SNIDOW: Objection to the
 4 form.
 5 MR. MURDICA: I just want to
 6 get your testimony right.
 7 MR. SNIDOW: Objection to the
 8 form again.
 9 Do you mind repeating your
 10 question, Jim?
 11 MR. MURDICA: Sure.
 12 QUESTIONS BY MR. MURDICA:
 13 Q. Do you rely on Dr. Hollander's
 14 neurodevelopmental opinions for your expert
 15 opinions here?
 16 A. I read Dr. Hollander's
 17 opinions. They are generally consistent with
 18 my own.
 19 And I reported my view on
 20 neurodevelopment in my own report, and my
 21 report is generally consistent with
 22 Dr. Hollander's.
 23 Q. But you didn't read his
 24 testimony, correct?
 25 A. I didn't.

Page 33

1 Q. Okay. And you're test -- and
 2 you're testifying right now that you're not
 3 relying on Dr. Hollander, right?
 4 A. I read Dr. Hollander's, so
 5 Dr. Hollander's report is consistent with
 6 mine. So I -- if you want to discuss
 7 anything that is in Dr. Hollander's report, I
 8 would be happy to.
 9 Q. Yes.
 10 And my question was whether
 11 you're relying on him, and your answer is no,
 12 correct?
 13 A. I didn't say that.
 14 Q. Okay. Well, are you -- is
 15 Dr. Baccarelli relying on Dr. Hollander here
 16 or not?
 17 A. I'm relying on the scientific
 18 literature that is made of hundreds of
 19 papers, and I also considered Dr. Hollander's
 20 report.
 21 Q. Okay. But you don't need
 22 Dr. Hollander's opinions for -- to have your
 23 own that you're offering here, correct?
 24 A. I'm sure I need many of the
 25 things Dr. Hollander said. Dr. Hollander is

<p style="text-align: right;">Page 34</p> <p>1 not the only one in the world to say those</p> <p>2 things.</p> <p>3 Q. Okay. So do you need</p> <p>4 Dr. Hollander's opinion here to support yours</p> <p>5 or not?</p> <p>6 A. I can't answer the question as</p> <p>7 you phrase it, as you can understand.</p> <p>8 Q. Okay. Dr. Baccarelli, do you</p> <p>9 believe you have opinions here that can stand</p> <p>10 on their own without any of the other</p> <p>11 experts?</p> <p>12 A. The other experts that covered</p> <p>13 hundreds of papers, and so there is a lot</p> <p>14 there that is important to this case.</p> <p>15 Q. Okay. You could look at those</p> <p>16 papers, too, right?</p> <p>17 A. Of course I can.</p> <p>18 Q. Have you?</p> <p>19 A. Many of them.</p> <p>20 Q. But not all of them?</p> <p>21 A. I'm sure I didn't read all of</p> <p>22 them.</p> <p>23 Q. All right. And why did you</p> <p>24 look at Dr. Cabrera's deposition transcript?</p> <p>25 A. It came early, and I thought it</p>	<p style="text-align: right;">Page 36</p> <p>1 reviewed the letters clearly now, so I</p> <p>2 was pretty sure that these -- we were</p> <p>3 right to publish this paper.</p> <p>4 QUESTIONS BY MR. MURDICA:</p> <p>5 Q. Right.</p> <p>6 In other words, Dr. Baccarelli,</p> <p>7 in -- as of the time of publication of</p> <p>8 Dr. Hannah Laue's paper, you did not believe</p> <p>9 that there was any relationship between</p> <p>10 acetaminophen exposure during pregnancy and</p> <p>11 adverse neurodevelopmental outcomes, correct?</p> <p>12 A. I believed it was at least</p> <p>13 uncertain.</p> <p>14 Q. Okay. At that time, had you</p> <p>15 reviewed any of the studies from the Danish</p> <p>16 National Birth Cohort?</p> <p>17 A. I don't think I did at that</p> <p>18 time. I reviewed -- I read some of the</p> <p>19 literature, especially the one related to</p> <p>20 intelligence.</p> <p>21 Q. Okay. Now, Dr. Baccarelli, are</p> <p>22 you an author on the -- Dr. Laue's paper that</p> <p>23 you have in front of you?</p> <p>24 A. Of course. I'm the last</p> <p>25 author.</p>
<p style="text-align: right;">Page 35</p> <p>1 was interesting to look at it.</p> <p>2 Q. Okay. Did his testimony make</p> <p>3 you want to change any of your opinions?</p> <p>4 A. No. He really gave me a</p> <p>5 glimpse on how this type of things work.</p> <p>6 It's the first time I work in a case of this</p> <p>7 type, so it was important to me to understand</p> <p>8 the dynamics.</p> <p>9 Q. Okay. So after you saw the</p> <p>10 results of Dr. Laue's examination of meconium</p> <p>11 and acetaminophen exposure, at that point in</p> <p>12 time did you still believe that acetaminophen</p> <p>13 was not associated with adverse</p> <p>14 neurodevelopmental outcomes?</p> <p>15 MR. SNIDOW: Objection to the</p> <p>16 form.</p> <p>17 You can answer, Dr. Baccarelli.</p> <p>18 THE WITNESS: At that time,</p> <p>19 again, I thought this was a study that</p> <p>20 I wanted to support, and clearly --</p> <p>21 clearly I -- I was very sure that this</p> <p>22 study was negative.</p> <p>23 All the other papers in the</p> <p>24 literature, I hadn't reviewed in the</p> <p>25 details of the letter. I have</p>	<p style="text-align: right;">Page 37</p> <p>1 Q. Okay. And did you review it</p> <p>2 prior to publication, if you remember?</p> <p>3 A. Of course I did.</p> <p>4 Q. Okay. How do you know?</p> <p>5 A. How do I know what?</p> <p>6 Q. How do you know that you</p> <p>7 reviewed it?</p> <p>8 A. I review all the papers I</p> <p>9 publish.</p> <p>10 Q. Do you -- do you know if you</p> <p>11 revised it?</p> <p>12 A. Of course I did.</p> <p>13 Q. Okay. Do you remember what you</p> <p>14 revised?</p> <p>15 A. Absolutely not.</p> <p>16 Q. Okay. Do you know how many</p> <p>17 times you revised it?</p> <p>18 A. I typically do three or four</p> <p>19 hours of revisions. It might be two or</p> <p>20 three.</p> <p>21 Q. Okay. Do you look at -- of the</p> <p>22 papers that you review and revise, do you</p> <p>23 look at the citations in the papers?</p> <p>24 A. I -- it's a teamwork, so I</p> <p>25 trust that I -- it's a teamwork, so I</p>

<p style="text-align: right;">Page 38</p> <p>1 trust -- I need to trust my team members. So</p> <p>2 in this case, I review some of the -- I knew</p> <p>3 some of the citations. I didn't review all</p> <p>4 of them.</p> <p>5 Q. Okay. But you wouldn't let a</p> <p>6 paper go out with your name on it unless you</p> <p>7 reviewed it, right?</p> <p>8 A. Yes, but that doesn't mean I</p> <p>9 read all the literature. No, I never do</p> <p>10 that, and I'm perfectly fine with that.</p> <p>11 Q. Okay. Dr. Baccarelli, before a</p> <p>12 paper goes out with your name on it, you've</p> <p>13 read the words in the paper itself, even if</p> <p>14 not the citations, correct?</p> <p>15 A. Oh, absolutely.</p> <p>16 Q. Okay. And when you revise a</p> <p>17 paper with your name on it, how do you do</p> <p>18 that? Is it in redline? Do you offer</p> <p>19 telephone comments? Both?</p> <p>20 A. I mostly receive the paper in</p> <p>21 my e-mail. I set aside time. I read it. I</p> <p>22 make comments. Typically I ask lots of</p> <p>23 questions.</p> <p>24 I try to be pointed. I try to</p> <p>25 tell exactly what I think. I make a lot of</p>	<p style="text-align: right;">Page 40</p> <p>1 MR. SNIDOW: Objection to the</p> <p>2 form.</p> <p>3 You can answer.</p> <p>4 THE WITNESS: By the way, I</p> <p>5 found here it was 20 -- this came out</p> <p>6 at the -- in 2018. The advanced</p> <p>7 access publication date was</p> <p>8 September 7, 2018.</p> <p>9 After working on this, we</p> <p>10 started to work on a larger study</p> <p>11 looking at ADHD and looking at brain</p> <p>12 MRIs, and that was published in 2020.</p> <p>13 That was Baker, et al., 2020.</p> <p>14 By the way, something I forgot</p> <p>15 about my report. I think I wrote</p> <p>16 Baker 2022 a few times when I meant</p> <p>17 Baker 2020 when you asked me before.</p> <p>18 I think -- there are two</p> <p>19 papers. One is 2022 and one 2020. I</p> <p>20 think at some point I wrote 2022 while</p> <p>21 it was 2020.</p> <p>22 QUESTIONS BY MR. MURDICA:</p> <p>23 Q. Okay. Baker 2020 was -- the</p> <p>24 first author was a student of yours, correct?</p> <p>25 A. Yep. Absolutely.</p>
<p style="text-align: right;">Page 39</p> <p>1 objections. I put myself in the shoes of the</p> <p>2 doubters, and I try to say exactly what any</p> <p>3 possible objection will be. And often I play</p> <p>4 the devil's advocate.</p> <p>5 Q. And when you referred to</p> <p>6 objection, do you mean a question by a peer</p> <p>7 reviewer?</p> <p>8 A. A question a peer reviewer</p> <p>9 might ask.</p> <p>10 Q. Okay. Did there come a point</p> <p>11 in time -- so Dr. Laue's paper was published</p> <p>12 in 2019, right?</p> <p>13 A. That is correct.</p> <p>14 Q. Do you recall what -- whether</p> <p>15 it was beginning of the year or end of the</p> <p>16 year?</p> <p>17 A. It -- yeah, it came out at the</p> <p>18 beginning, apparently. I'm not sure.</p> <p>19 Q. Okay. When -- if you remember,</p> <p>20 to the extent you remember, when was the next</p> <p>21 time after reviewing and revising Dr. Laue's</p> <p>22 paper that you had any involvement in looking</p> <p>23 at the relationship between acetaminophen</p> <p>24 exposure in utero and neurodevelopmental</p> <p>25 outcomes?</p>	<p style="text-align: right;">Page 41</p> <p>1 Q. Okay.</p> <p>2 A. He was a doctoral student. One</p> <p>3 of the smartest doctoral students I ever had.</p> <p>4 Q. And Mr. Baker was actually</p> <p>5 doing this as part of his dissertation,</p> <p>6 right?</p> <p>7 A. Correct.</p> <p>8 Q. Okay. And the part of the</p> <p>9 study was utilizing the same meconium samples</p> <p>10 that Dr. Hannah Laue utilized for the paper</p> <p>11 you and her did in 2018, right?</p> <p>12 A. They are not the same meconium</p> <p>13 sample. They -- the sample size is bigger,</p> <p>14 so there are many more subjects in that</p> <p>15 study, in Baker.</p> <p>16 Another difference is that</p> <p>17 these children were 6 to 7 -- 6 to 8 years</p> <p>18 old in Laue. In Baker, they had become 10 to</p> <p>19 12 year old. So we had longer follow-up,</p> <p>20 more time to develop phenotypes, more time to</p> <p>21 develop especially ADHD.</p> <p>22 As you know, ADHD is -- they</p> <p>23 are diagnosed usually between age 6 and</p> <p>24 age 10, 11, so they -- the children by then</p> <p>25 had gotten to be fully mature, if you may.</p>

Page 42

1 Q. Dr. Baccarelli, do you know
2 what Dr. Hollander testified as to the
3 average age of diagnosis for a child with
4 ADHD?
5 MR. SNIDOW: Objection to the
6 form.
7 THE WITNESS: I'm happy to hear
8 it.
9 QUESTIONS BY MR. MURDICA:
10 Q. Okay. So Dr. Baccarelli's
11 testimony is that the diagnosis age for
12 children with ADHD is 10 to 12; is that
13 right?
14 A. I didn't say that.
15 MR. SNIDOW: Object -- sorry,
16 hold on. Objection to the form.
17 Dr. Baccarelli, you can
18 clarify, if you like.
19 QUESTIONS BY MR. MURDICA:
20 Q. Dr. Baccarelli, what is --
21 according to Dr. Baccarelli, what is the
22 average age of diagnosis of ADHD in the
23 United States?
24 A. The cases of ADHD starts to be
25 diagnosed as early as five years. Many cases

Page 43

1 of ADHD gets diagnosed when children go to
2 school, so children go to school between 5
3 and 6, and they keep being diagnosed up to
4 age 10.
5 Q. Okay. Dr. Baccarelli, in
6 Canada, what is the average age of diagnosis
7 of ADHD?
8 A. It's probably the same as
9 United States, around 6 or 7 years old.
10 Q. Do you know?
11 A. I'm happy to review it for you.
12 Q. Okay. Because what we're
13 talking about is subjects in Canada, not the
14 United States, correct?
15 A. Absolutely. And as I
16 mentioned, we did a study 10 ten years
17 because by then we were sure that all the
18 people would have gotten ADHD. Because there
19 might be some stragglers who get diagnosed at
20 10, 11. And that helps. That helps us to
21 make sure that we classify all the children
22 with ADHD as having ADHD.
23 You can understand that if I do
24 a study at age 4, there might be some
25 diagnosis of ADHD even at age 4, perhaps,

Page 44

1 though it's very early.
2 Q. Dr. Baccarelli, you're not
3 sitting here telling us that Dr. Laue and
4 Dr. Baker studied different cohorts, right?
5 MR. SNIDOW: Objection to the
6 form.
7 It's not what he testified.
8 THE WITNESS: I'm here to tell
9 you that Dr. Baker is -- Baker's is a
10 larger study, and the Baker is a
11 little wave of -- it's a new follow-up
12 with the same people.
13 But again, at 6 to 8 years,
14 they -- we were able to call back,
15 because of funding limitations, only a
16 subset of the -- of the study.
17 So Laue is a much smaller study
18 than Baker.
19 QUESTIONS BY MR. MURDICA:
20 Q. Dr. Baccarelli, the same 396
21 meconium samples from the GESTE cohort in
22 Sherbrooke is what has been studied in each
23 meconium study that you've been involved in,
24 correct?
25 A. That is correct.

Page 45

1 Q. Okay. When -- so back to my
2 original question.
3 A. Yes.
4 Q. Is the Baker 2020 results the
5 first time you thought there was an
6 association between acetaminophen exposure in
7 utero and neurodevelopmental outcomes?
8 MR. SNIDOW: Objection to the
9 form.
10 You can answer, Dr. Baccarelli.
11 THE WITNESS: It was the first
12 paper I published that shows an
13 association between acetaminophen
14 during pregnancy and ADHD.
15 At this time I had started to
16 look at the literature a little more
17 carefully, more carefully, and by --
18 by 2020, I was surprised. So I did a
19 deep dive in the literature, and I
20 started to believe at the end of 2020
21 that there was a problem. There was a
22 concern.
23 Over time, I started to believe
24 there was a concern and that -- to be
25 honest, when I reviewed the literature

<p style="text-align: right;">Page 46</p> <p>1 for this case, I was blown away by the</p> <p>2 consistency. I couldn't believe my</p> <p>3 eyes that there were so many studies</p> <p>4 showing so much association, a level</p> <p>5 of consistence I've never seen before</p> <p>6 in my life --</p> <p>7 QUESTIONS BY MR. MURDICA:</p> <p>8 Q. Okay.</p> <p>9 A. -- in studies that I work and I</p> <p>10 create my own.</p> <p>11 Q. Okay. Dr. Baccarelli, did I</p> <p>12 just hear you say when you started looking at</p> <p>13 it for this case, and then you said about</p> <p>14 what a great connection it was?</p> <p>15 MR. SNIDOW: Objection to the</p> <p>16 form.</p> <p>17 THE WITNESS: I -- I -- I --</p> <p>18 MR. SNIDOW: Hold -- sorry,</p> <p>19 sorry.</p> <p>20 THE WITNESS: Yeah.</p> <p>21 MR. SNIDOW: You can answer. I</p> <p>22 just want to be allowed to object</p> <p>23 before you start answering.</p> <p>24 THE WITNESS: I said that I</p> <p>25 became gradually aware of the -- of</p>	<p style="text-align: right;">Page 48</p> <p>1 To do research, you need to</p> <p>2 know the main purpose. You don't need</p> <p>3 to know all the papers under the sun.</p> <p>4 I think you appreciate the</p> <p>5 difference.</p> <p>6 QUESTIONS BY MR. MURDICA:</p> <p>7 Q. The Baker paper in 2020, you</p> <p>8 were a signatory on that one, right?</p> <p>9 A. Correct.</p> <p>10 Q. Okay. And did you look at the</p> <p>11 references in that one before it was</p> <p>12 published?</p> <p>13 A. I looked at what -- at the list</p> <p>14 of references. I did not read all the</p> <p>15 references that are there.</p> <p>16 Q. When did you read all of the</p> <p>17 references in Baker for -- you have now,</p> <p>18 correct?</p> <p>19 A. I'm sure I haven't. I'm sure</p> <p>20 that there might be paper -- references in</p> <p>21 Baker's that I haven't read today.</p> <p>22 Q. Do you believe that you've read</p> <p>23 all of the papers today on acetaminophen</p> <p>24 exposure during pregnancy and the outcome of</p> <p>25 autism?</p>
<p style="text-align: right;">Page 47</p> <p>1 the connection. And before starting</p> <p>2 to work on this case, I became pretty</p> <p>3 convinced, or almost entirely</p> <p>4 convinced, reasonably convinced, that</p> <p>5 there was a causal association.</p> <p>6 Of course, I'm a scientist, so</p> <p>7 I wanted to leave no stones unturned.</p> <p>8 And I worked on -- pretty diligently</p> <p>9 on the case, and I review all the</p> <p>10 possible papers that I could find.</p> <p>11 And I hadn't done that before.</p> <p>12 I hadn't reviewed as of 2023 all the</p> <p>13 papers that were around there. In</p> <p>14 2020, 2021, perhaps I had reviewed 70,</p> <p>15 80 percent of the papers.</p> <p>16 As you understand, when we</p> <p>17 publish a paper, we need to know</p> <p>18 the -- when we work on a project, we</p> <p>19 need to know the main -- the main</p> <p>20 papers that are around.</p> <p>21 I never -- I never was in the</p> <p>22 business of also saying, especially</p> <p>23 under oath, whether there is causal</p> <p>24 association. I was in the business of</p> <p>25 doing research.</p>	<p style="text-align: right;">Page 49</p> <p>1 MR. SNIDOW: Objection to the</p> <p>2 form.</p> <p>3 You can answer, Dr. Baccarelli.</p> <p>4 THE WITNESS: You have the</p> <p>5 entire list of papers. I did a</p> <p>6 systematic review. Databases are not</p> <p>7 perfect, so it's possible that one</p> <p>8 paper might have dis -- might have --</p> <p>9 might have not show up in my search or</p> <p>10 even more.</p> <p>11 But I -- if there is any paper</p> <p>12 that you think should be included in</p> <p>13 my review, I'm happy to discuss it</p> <p>14 today.</p> <p>15 QUESTIONS BY MR. MURDICA:</p> <p>16 Q. Dr. Baccarelli, you just</p> <p>17 testified that you believe you left no stone</p> <p>18 unturned, right?</p> <p>19 A. I left no stone unturned.</p> <p>20 Q. Okay.</p> <p>21 A. In fact, I did a systematic</p> <p>22 search, and this what in the industry we do.</p> <p>23 We do a systematic search.</p> <p>24 And if there is a paper that I</p> <p>25 didn't consider, I'd be happy to discuss it</p>

<p style="text-align: right;">Page 50</p> <p>1 anytime. I -- you know, the evidence is so 2 strong that it will need a few papers to 3 change my opinion, not just one or two or 4 three. 5 Q. Dr. Baccarelli, with respect to 6 the outcome of autism, you believe sitting 7 here today that you've reviewed the papers 8 describing any association or lack thereof 9 between acetaminophen exposure during 10 pregnancy and the outcome of autism, correct? 11 MR. SNIDOW: Objection to form. 12 Asked and answered. 13 THE WITNESS: Let me -- let me 14 tell you what I did. If I can give to 15 my report. 16 So this -- on page 13. On 17 March 19, 2023, I conducted a 18 systematic search of the literature on 19 PubMed to identify original papers on 20 the relationship between ADHD, ASD and 21 NNDs and prenatal exposure to 22 acetaminophen, including observational 23 studies and meta-analysis. 24 I went through all of them, I 25 triaged them, and I put in the report</p>	<p style="text-align: right;">Page 52</p> <p>1 about the literature with ASD as an outcome, 2 and I said when did you first do that review. 3 And I think you just answered 4 that it was March for ASD, correct? 5 MR. SNIDOW: Hold on. 6 Objection to the form, particularly 7 commentary about him answering. He's 8 answering your questions. 9 You can answer. 10 THE WITNESS: I searched the 11 literature on March 19, 2023, using -- 12 using search terms. And what I found 13 and what I got turned out is what you 14 see. 15 QUESTIONS BY MR. MURDICA: 16 Q. Yes. 17 And you identified six studies 18 regarding the outcome of autism, correct? 19 MR. SNIDOW: Objection to the 20 form. 21 THE WITNESS: Let me -- let me 22 check. 23 I thought it was seven, but -- 24 yeah, there are six. 25</p>
<p style="text-align: right;">Page 51</p> <p>1 if they looked at the association 2 between acetaminophen and ADHD, 3 prenatal acetaminophen and ADHD, 4 prenatal acetaminophen and ASD, 5 prenatal acetaminophen and other 6 neurodevelopmental disorders. 7 QUESTIONS BY MR. MURDICA: 8 Q. Okay. Doctor, I'd appreciate 9 it if you'd do your best -- I know you're 10 very smart. If you could listen to my 11 questions, it will make this go a lot faster. 12 So my question is about -- 13 MR. SNIDOW: Hold on. 14 QUESTIONS BY MR. MURDICA: 15 Q. -- ASD -- 16 MR. MURDICA: You will not 17 interrupt me. 18 MR. SNIDOW: I thought you were 19 done. 20 MR. MURDICA: You will not 21 interrupt me. 22 MR. SNIDOW: I thought you were 23 done. 24 QUESTIONS BY MR. MURDICA: 25 Q. Dr. Baccarelli, my question was</p>	<p style="text-align: right;">Page 53</p> <p>1 QUESTIONS BY MR. MURDICA: 2 Q. Now, which of those six had you 3 seen before March 18, 2023? 4 A. I'm -- I can't remember. 5 Q. Okay. Do you think you had 6 seen any of them? 7 A. Oh, yeah. I certainly saw -- I 8 certainly saw Liew, Avella-Garcia, Ji and 9 Alemany. 10 MR. SNIDOW: And just -- do you 11 mind saying the year on Liew for the 12 record? 13 THE WITNESS: Liew 2016. 14 Avella-Garcia 2016. Ji 2020. Alemany 15 2021. 16 QUESTIONS BY MR. MURDICA: 17 Q. Now, Dr. Baccarelli, when were 18 you hired in this matter? 19 A. In January. I believe it was 20 January. 21 Q. January of 2023? 22 A. Yeah. 23 Q. Okay. And was that after a 24 conversation with Dr. Pearson about this? 25 A. No.</p>

<p style="text-align: right;">Page 54</p> <p>1 Q. Do you know how you came to be 2 hired?</p> <p>3 A. I was contacted by Amanda Hunt 4 and --</p> <p>5 Q. Dr. Baccarelli, do you know 6 when Dr. Pearson was hired to work --</p> <p>7 A. I have absolutely no idea.</p> <p>8 Q. Okay. And are you being paid 9 for your work here?</p> <p>10 A. I am.</p> <p>11 Q. Is it by the hour?</p> <p>12 A. It is by the hour.</p> <p>13 Q. Okay. And what is your hourly 14 rate?</p> <p>15 A. My hourly rate is 700 per hour.</p> <p>16 Q. Okay. And does that money go 17 to Dr. Baccarelli or to the Mailman School or 18 to Columbia University?</p> <p>19 A. The money comes to 20 Dr. Baccarelli.</p> <p>21 Q. Okay. And do you know 22 approximately how much money Dr. Baccarelli 23 has made off of this litigation to date?</p> <p>24 MR. SNIDOW: Objection to the 25 form.</p>	<p style="text-align: right;">Page 56</p> <p>1 filed a report to make sure that there 2 is no conflict of interest.</p> <p>3 We have a reporting system for 4 conflict of interest, and we are asked 5 to report any extramural activity we 6 do that can represent a potential 7 conflict with our jobs. So I made 8 sure to report it.</p> <p>9 And I'm pretty sure there's not 10 a conflict of interest, but we are 11 requested to report any -- anytime 12 someone pays anything to us.</p> <p>13 QUESTIONS BY MR. MURDICA:</p> <p>14 Q. And you did that two weeks ago?</p> <p>15 A. I did the first time in January 16 when I signed the contract. I updated my 17 disclosure in March when money started to 18 accumulate.</p> <p>19 If you want, I can tell you all 20 the breakdowns and the different thresholds 21 of money that Columbia has, but --</p> <p>22 Q. I'm aware, Doctor.</p> <p>23 A. Yeah. And I decided two weeks 24 ago to update my disclosure because I 25 realized that I had exceeded another</p>
<p style="text-align: right;">Page 55</p> <p>1 THE WITNESS: I'm -- I -- yes. 2 I work for more than 200 hours, so 3 it's about \$150,000.</p> <p>4 QUESTIONS BY MR. MURDICA:</p> <p>5 Q. Does the Mailman School know 6 that you've made that money from plaintiffs' 7 lawyers?</p> <p>8 MR. SNIDOW: Objection to the 9 form.</p> <p>10 THE WITNESS: Say that again? 11 Sorry.</p> <p>12 QUESTIONS BY MR. MURDICA:</p> <p>13 Q. Does the Mailman School know 14 that you've made 140 or \$150,000 from 15 plaintiffs' lawyers?</p> <p>16 MR. SNIDOW: Objection to the 17 form again.</p> <p>18 Dr. Baccarelli, you can -- you 19 can answer to the extent you 20 understand it.</p> <p>21 THE WITNESS: They absolutely 22 do. I disclosed that several times, 23 including two weeks ago when I -- at 24 this point I know what the Daubert is 25 going to be, so I disclosed the -- and</p>	<p style="text-align: right;">Page 57</p> <p>1 threshold that Columbia wants me to pay 2 attention to.</p> <p>3 Q. Dr. Baccarelli, have you 4 provided the school or the university 5 administration your reports in this matter?</p> <p>6 A. They don't want to see it, and 7 I'm not supposed to report it. I'm happy to 8 report it -- to give it to them at any time 9 if they want it, but I -- I'm not required 10 to. I haven't done it.</p> <p>11 Q. Okay.</p> <p>12 A. I'm not even encouraged to.</p> <p>13 Q. Dr. Baccarelli, between the 14 publication of the 2020 Baker paper and your 15 hiring by plaintiffs' lawyers in January 16 of 2023, did you conduct any other work 17 regarding acetaminophen and pregnancy 18 outcomes?</p> <p>19 MR. SNIDOW: Objection to the 20 form.</p> <p>21 You can answer.</p> <p>22 THE WITNESS: We kept working 23 on a paper that eventually became 24 Baker 2022.</p> <p>25</p>

<p style="text-align: right;">Page 58</p> <p>1 QUESTIONS BY MR. MURDICA:</p> <p>2 Q. Okay. And what was your role</p> <p>3 with respect to that paper?</p> <p>4 A. I'm one of the authors.</p> <p>5 Q. Was Baker 20 -- was your work</p> <p>6 on Baker 2022 the only other acetaminophen</p> <p>7 exposure work that you had done prior to</p> <p>8 being hired by plaintiffs here?</p> <p>9 MR. SNIDOW: Objection to the</p> <p>10 form.</p> <p>11 THE WITNESS: I believe so. If</p> <p>12 I'm missing anything, please remind</p> <p>13 me, but I can't remember other type of</p> <p>14 works that was published or we are</p> <p>15 planning to publish.</p> <p>16 QUESTIONS BY MR. MURDICA:</p> <p>17 Q. Do you have any ongoing work</p> <p>18 with respect to acetaminophen exposure and</p> <p>19 pregnancy outcomes right now?</p> <p>20 A. Oh, right now we are not -- we</p> <p>21 are -- I'm not working on that at the moment.</p> <p>22 Q. Have you submitted your expert</p> <p>23 report or any version of your expert report</p> <p>24 for publication anywhere?</p> <p>25 A. That is something I really want</p>	<p style="text-align: right;">Page 60</p> <p>1 percent chance that your paper will</p> <p>2 get published.</p> <p>3 Okay?</p> <p>4 QUESTIONS BY MR. MURDICA:</p> <p>5 Q. Dr. Baccarelli, have you</p> <p>6 started working on that yet?</p> <p>7 A. I'm going to start tomorrow,</p> <p>8 really. This is something I want to do as</p> <p>9 soon as possible. It's fresh. I don't want</p> <p>10 to become aged.</p> <p>11 And it's going to become pretty</p> <p>12 strong -- and by the way, I published 600</p> <p>13 papers. I know which papers get published</p> <p>14 and which not. I really know that very well.</p> <p>15 So I appreciate your opinion.</p> <p>16 Q. Will you commit to do it,</p> <p>17 Dr. Baccarelli?</p> <p>18 A. Oh, I'm going to do it,</p> <p>19 absolutely.</p> <p>20 Q. How quickly can you do it?</p> <p>21 A. I hope to have it done --</p> <p>22 published by early 2024.</p> <p>23 Q. Okay. Will you commit to that</p> <p>24 here on the record?</p> <p>25 A. I'm going to try my best.</p>
<p style="text-align: right;">Page 59</p> <p>1 to do. I think this is strong, and this is</p> <p>2 something that would make a nice paper.</p> <p>3 And of course, I mean, I</p> <p>4 finished this three weeks ago. I really want</p> <p>5 to condense it in a paper and send it out. I</p> <p>6 think it will be something important for the</p> <p>7 literature.</p> <p>8 Q. Assuming you can get it</p> <p>9 published, right?</p> <p>10 MR. SNIDOW: Objection to the</p> <p>11 form.</p> <p>12 THE WITNESS: I -- I'm very</p> <p>13 sure it's going to get published.</p> <p>14 Trust me.</p> <p>15 QUESTIONS BY MR. MURDICA:</p> <p>16 Q. I am very sure there's zero</p> <p>17 percent chance, but I appreciate your</p> <p>18 optimism, Dr. Baccarelli.</p> <p>19 MR. SNIDOW: Okay, Jim. Jim,</p> <p>20 listen. Listen, Jim. Jim, I'm happy</p> <p>21 to limit my objection to objection to</p> <p>22 the form, but you can't go making</p> <p>23 commentary like that. And if you want</p> <p>24 to take it to the judge, I'm happy to</p> <p>25 show her, I'm sure there's zero</p>	<p style="text-align: right;">Page 61</p> <p>1 Q. Okay. So when I ask you at the</p> <p>2 Daubert hearing, you'll be able to tell me</p> <p>3 how much effort you've put into it, right?</p> <p>4 MR. SNIDOW: Objection to the</p> <p>5 form.</p> <p>6 Again, I think this is an</p> <p>7 entirely improper question.</p> <p>8 But you can answer.</p> <p>9 THE WITNESS: I'm very happy to</p> <p>10 do that. I have no problems. I'm</p> <p>11 really going to do it. I'm serious.</p> <p>12 This is strong. It's nice. It's</p> <p>13 transparent. If people have</p> <p>14 objections, they can go into the</p> <p>15 details and see where I'm wrong.</p> <p>16 We do -- we do literature all</p> <p>17 the time. If there is anything wrong,</p> <p>18 I stand by it.</p> <p>19 QUESTIONS BY MR. MURDICA:</p> <p>20 Q. Okay. Dr. Baccarelli, are you</p> <p>21 an obstetrician?</p> <p>22 A. I'm not an obstetrician, but</p> <p>23 you appreciate that I've done -- I published</p> <p>24 300 papers looking at the epidemiology on</p> <p>25 mothers that are pregnant and their children.</p>

Page 62

1 So as long as this case is concerned, I'm
 2 very well-qualified to understand the effect
 3 of exposures during pregnancy.
 4 Q. You are not one of the doctors
 5 that's board certified in obstetrics or
 6 gynecology, correct?
 7 A. Definitely not.
 8 Q. Okay. Have you talked to any
 9 board certified obstetricians about your
 10 opinions here?
 11 A. Oh, yes. Yes. We have an
 12 obstetrician on the team at -- in Sherbrooke,
 13 and I did speak with her about that.
 14 Q. Okay. And have you talked to
 15 anyone -- so Sherbrooke, that's an
 16 obstetrician in Canada?
 17 A. Correct.
 18 Q. Okay. Have you ever -- have
 19 you talked to any board certified United
 20 States obstetricians about your opinions
 21 here?
 22 A. Let me think. I spoke with a
 23 lot of people, so you might -- it might as
 24 well be. I'm not able to tell you whether I
 25 spoke -- I don't usually ask for -- whether

Page 63

1 people are certified or not.
 2 Q. Okay. Well -- all right.
 3 Let's go through the lot of people you talked
 4 to.
 5 Who have you talked to about
 6 your opinions here?
 7 A. I'm terrible in names, but I
 8 spoke with Larissa Takser.
 9 Q. Can you say that last name?
 10 A. Larissa Takser, my colleague
 11 who's a psychiatrist in Sherbrooke.
 12 Q. Okay.
 13 A. I spoke to colleagues at my
 14 school, Ana Navas-Acien.
 15 I spoke to colleagues --
 16 Amisota {phonetic}, who is also my school.
 17 I spoke with a lot people.
 18 Q. Okay.
 19 A. I speak with colleagues at
 20 conferences. I was at the conference of
 21 the -- of epidemiologists in Oregon a few
 22 weeks ago, and I was working intensively on
 23 those and started to talk about it, and
 24 especially how impressive the literature is
 25 in supporting an association.

Page 64

1 Q. Okay. Have you spoken to
 2 anyone from the American College of
 3 Gynecology?
 4 A. No, I have not.
 5 Q. Okay. Have you spoken to
 6 any -- you reference in your report the
 7 so-called consensus statement, correct?
 8 MR. SNIDOW: Objection.
 9 Objection to the form.
 10 THE WITNESS: That is a
 11 consensus statement as good as any
 12 consensus statement in the world. If
 13 you say so-called, I will -- I will
 14 love for you to qualify why you think
 15 it's so-called.
 16 QUESTIONS BY MR. MURDICA:
 17 Q. Well, Dr. Baccarelli, you
 18 may -- maybe you don't know this, but you
 19 tell me if you do. A consensus statement
 20 normally has a medical body or a regulatory
 21 body behind it.
 22 You didn't know that?
 23 A. That is not true. A consensus
 24 statement is a group of people who come
 25 together and agree on a consensus. That's

Page 65

1 the name of the -- of the statement. It's
 2 called consensus statement because there are
 3 a group of people who write a consensus.
 4 Q. Okay.
 5 A. Whether they are -- we are
 6 backed by an organization or not, that
 7 doesn't make it less of a consensus
 8 statement.
 9 Q. Have you ever been --
 10 A. I'm sor -- I'm sorry, you are
 11 wrong about that.
 12 Q. Okay, Dr. Baccarelli --
 13 MR. SNIDOW: Sorry.
 14 Are you done finishing?
 15 Because you do need to let him
 16 answer.
 17 Are you done with your answer?
 18 THE WITNESS: Yes.
 19 MR. SNIDOW: Okay.
 20 MR. MURDICA: He was clearly
 21 done. Please stop that.
 22 QUESTIONS BY MR. MURDICA:
 23 Q. Dr. Baccarelli, have you ever
 24 been part of a consensus statement before?
 25 A. I worked on several reports

<p style="text-align: right;">Page 66</p> <p>1 with organizations. I don't think I've been 2 part of a consensus statement. 3 Q. Okay. And you just said those 4 were with organizations, right? 5 A. Yes. 6 Q. Medical organizations, right? 7 A. Yes. Yes. Absolutely. 8 Q. Have you ever seen another 9 consensus statement that didn't involve a 10 medical or a regulatory organization prior to 11 this one? 12 A. Oh, yes. There are many. 13 Q. Give me an example. 14 A. For instance, the -- there is a 15 consortium called CHARGE that typically 16 writes consensus statements. 17 I'm -- there is a consensus 18 statement that was just published by the 19 pregnancy in child epigenetics cohort that 20 presents child -- epigenetic consortium. 21 They came together and wrote a paper about 22 how to study pregnancy and child 23 environmental exposures. It's a consensus 24 statement. 25 If you believe that having ACOG</p>	<p style="text-align: right;">Page 68</p> <p>1 A. Particularly I want to point 2 out, I didn't speak with them before they 3 publish the statement. I especially didn't 4 give them any information that could 5 contribute to the statement. 6 Q. Okay. And to the best of your 7 recollection, they didn't contact you before 8 they issued the statement, right? 9 A. Oh, they didn't contact me 10 formally. 11 Q. Okay. And you just testified 12 that Zeyan Liew -- that's Dr. Liew, right? 13 A. Correct. 14 Q. That you and Dr. Liew are 15 friendly? 16 A. Dr. Liew gave a presentation at 17 Columbia University. We are not friendly. 18 We have a professional relationship. He is a 19 very well-known epidemiologist in the field, 20 and I read his papers with attention. 21 And he -- I mean, I know that 22 he works at Yale. We have a professional 23 relationship. We are not friendly. 24 Q. When -- Dr. Baccarelli, when is 25 the first time to your recollection that</p>
<p style="text-align: right;">Page 67</p> <p>1 or any other -- you're entitled to that 2 opinion. 3 At the same time, a consensus 4 statement is what it is. It's a statement of 5 people who reach a consensus about a certain 6 topic. 7 Q. I appreciate that's your 8 opinion, Dr. Baccarelli. 9 For the consensus statement 10 we're talking about here, there were 91 11 people, give or take, right? 12 A. I think that is right. 13 Q. Okay. Have you spoken to any 14 of those 91 people? 15 A. I don't think so. I think 16 we might have had communications with some of 17 them, but now -- I mean, if you -- if there 18 is anyone on the 91 that I spoke with, I 19 think Zeyan Liew is part of that, and we -- I 20 know Zeyan very well, and we had recent 21 e-mail exchange about acetaminophen and 22 genetics. 23 If there are others, I'm -- 24 please let me know. 25 Q. Okay. You said --</p>	<p style="text-align: right;">Page 69</p> <p>1 you -- well, let me ask it this way. 2 Have you ever spoken to 3 Dr. Liew? Not e-mail. Spoken with words. 4 A. Dr. Liew came for a 5 presentation at Columbia University probably 6 in 2020. To be completely transparent, he 7 interviewed for a job at Columbia University, 8 I think in 2019, so I spoke with him as part 9 of the interview process. I was one of the 10 selectors. 11 So my conversation for him was 12 about whether he wanted to come and whether 13 we wanted to hire him. 14 And at the end, he told us he 15 was going to Yale and -- before we could 16 reach a decision on whether to hire him or 17 not. So timing was not right, and we -- I 18 respect his opinion and his choice, of 19 course. 20 And we had a lot of candidates, 21 and the committee hadn't yet told me what 22 was -- what were the top candidates. So I 23 don't know whether Dr. Liew was a top 24 candidate or not. Would have been a top 25 candidate or not. He told us he was going to</p>

<p style="text-align: right;">Page 70</p> <p>1 Yale before the committee could send me a</p> <p>2 list of top candidates.</p> <p>3 Q. Understood, Dr. Baccarelli.</p> <p>4 At the time when you</p> <p>5 interviewed him in 2019, roughly, did you</p> <p>6 discuss acetaminophen in any way?</p> <p>7 A. It was -- 2023. It was 2017 or</p> <p>8 2016. Probably was five years ago at least.</p> <p>9 Q. So just to be clear, when you</p> <p>10 interviewed Dr. Liew at Columbia, you -- it</p> <p>11 was 20 --</p> <p>12 A. It was probably 20 -- 2017 or</p> <p>13 2018.</p> <p>14 Q. Okay. And at that time,</p> <p>15 Dr. Baccarelli, when you interviewed him, did</p> <p>16 you talk to him at all about acetaminophen?</p> <p>17 A. No. No. I talked about</p> <p>18 Columbia, the job. I talk about how great it</p> <p>19 is to live in New York City, how amazing it</p> <p>20 is, much better than the West Coast. I think</p> <p>21 he was there.</p> <p>22 We discussed about housing. We</p> <p>23 discussed about how we support faculty</p> <p>24 member. How beautiful it is to work with a</p> <p>25 chair like me and things like that.</p>	<p style="text-align: right;">Page 72</p> <p>1 mean, why there were so -- discrepancies,</p> <p>2 especially -- what is unusual about these two</p> <p>3 papers is that the second one doesn't</p> <p>4 acknowledge the first.</p> <p>5 The first author, Stergiakouli,</p> <p>6 is the last author in the second. And the</p> <p>7 first says A; the second says B. And B</p> <p>8 doesn't acknowledge the existence of A, as</p> <p>9 far as I understand. Well, at least it</p> <p>10 doesn't explain why A -- why A came to one</p> <p>11 conclusion, B.</p> <p>12 So I actually got to --</p> <p>13 Stergiakouli, who was a person in the UK, a</p> <p>14 colleague in the UK, hoping she could help me</p> <p>15 to understand why they really don't seem to</p> <p>16 have their acts together, to be honest.</p> <p>17 And she never replied, which is</p> <p>18 unusual, I will say. People usually reply to</p> <p>19 inquiries about their papers, especially if</p> <p>20 it comes from a university.</p> <p>21 So I really thought I'm missing</p> <p>22 something big here, that there's something</p> <p>23 obvious I'm not seeing. I really wanted like</p> <p>24 someone to be -- a reality check. I need</p> <p>25 someone to really see whether I'm really --</p>
<p style="text-align: right;">Page 71</p> <p>1 Q. Dr. Baccarelli, did there come</p> <p>2 a time when you did speak to Dr. Liew about</p> <p>3 acetaminophen?</p> <p>4 A. Speak verbally? I don't think</p> <p>5 I ever did.</p> <p>6 Q. Okay. To date?</p> <p>7 A. I believe so.</p> <p>8 Q. Okay.</p> <p>9 A. I mean, I can't remember -- I</p> <p>10 can't remember speaking -- or anything that</p> <p>11 might have stuck to my memory.</p> <p>12 Q. Sure.</p> <p>13 A. So I really -- yeah.</p> <p>14 Q. So let's go beyond speaking.</p> <p>15 Did there come a time when you</p> <p>16 contacted or they -- either you contacted</p> <p>17 Dr. Liew or Dr. Liew contacted you regarding</p> <p>18 acetaminophen?</p> <p>19 A. Yes. There was -- there is a</p> <p>20 very weird case in this literature about</p> <p>21 someone who published two papers that did the</p> <p>22 same thing, about the same thing, and they're</p> <p>23 pretty -- reaching different conclusions.</p> <p>24 And these are things -- Stergiakouli and</p> <p>25 Leppart. And I was really puzzled why -- I</p>	<p style="text-align: right;">Page 73</p> <p>1 there is an elephant in the room I can't see.</p> <p>2 So I thought of all the people</p> <p>3 that I could contact, I -- at that point I</p> <p>4 read that Zeyan Liew was reading a lot of</p> <p>5 papers, and I really see that his papers are</p> <p>6 very well-crafted and very well-documented.</p> <p>7 So I thought, well, let me write to Zeyan and</p> <p>8 see whether there is anything I'm missing.</p> <p>9 Q. Okay. Dr. Baccarelli, what you</p> <p>10 just described, is that the first contact you</p> <p>11 had with Dr. Liew?</p> <p>12 MR. SNIDOW: Objection to the</p> <p>13 form. Asked and answered.</p> <p>14 THE WITNESS: So I had other</p> <p>15 contacts with Dr. Liew. As I</p> <p>16 mentioned, I interviewed him. He</p> <p>17 interviewed with us.</p> <p>18 QUESTIONS BY MR. MURDICA:</p> <p>19 Q. Sorry.</p> <p>20 My original question, and then</p> <p>21 you gave a long explanation --</p> <p>22 A. Yeah.</p> <p>23 Q. -- that didn't answer my</p> <p>24 question.</p> <p>25 My original question was,</p>

<p>Page 74</p> <p>1 after -- from the time you interviewed 2 Dr. Liew, when -- was there a time that he 3 contacted you or you contacted him 4 thereafter?</p> <p>5 MR. SNIDOW: Hold on. 6 Objection to the form, particularly 7 the commentary. 8 Go ahead and answer. 9 MR. MURDICA: Hang on. I'm 10 being very patient. He's not 11 answering the questions. I'm being 12 very being patient and letting him say 13 whatever he wants. 14 MR. SNIDOW: Perhaps you should 15 ask better questions. 16 But you can answer, if you 17 understand. 18 THE WITNESS: I really don't 19 know. I mean, I remember only that -- 20 I remember only that interaction 21 about -- that e-mail exchange. 22 If there is anything else, I'm 23 happy to discuss and explain, but that 24 was -- 25</p>	<p>Page 76</p> <p>1 A. I can't remember. It must have 2 been in April or May. 3 Q. It was this year? 4 A. Yeah, absolutely. 5 Q. While you were working for the 6 plaintiffs' side? 7 MR. SNIDOW: Objection to the 8 form. 9 You can answer. 10 THE WITNESS: While I was -- 11 yeah, while I was assessing the 12 literature to -- in preparation for 13 this case. 14 QUESTIONS BY MR. MURDICA: 15 Q. Okay. And when you 16 contacted -- did you -- you contacted 17 Dr. Liew or he contacted you? 18 A. I did contact Dr. Liew. 19 Q. Okay. When you contacted 20 Dr. Liew, did you tell him the reason you 21 were asking him was because you were working 22 on litigation? 23 A. No. I didn't have to. There 24 was no reason to tell him. 25 The reason why I told him that</p>
<p>Page 75</p> <p>1 QUESTIONS BY MR. MURDICA: 2 Q. Okay. Just for the sake of the 3 record, sitting here today, Baccarelli -- 4 Dr. Baccarelli, as far as you know, the only 5 other interaction you had with Dr. Liew than 6 interviewing him was an e-mail exchange about 7 Stergiakouli? 8 A. There is -- 9 MR. SNIDOW: I'm sorry. 10 Objection to the form. Asked and 11 answered. 12 But you can answer. 13 THE WITNESS: So that is the 14 one I remember. If anything is, okay, 15 more recent, if there is anything that 16 perhaps I'm forgetting, I receive 17 about 300 to 400 e-mails a day, and I 18 speak every day with 30, 40 people. 19 If there is some -- if I forget an 20 interaction, you will forgive me. 21 QUESTIONS BY MR. MURDICA: 22 Q. Okay. Understood, 23 Dr. Baccarelli. 24 When was that e-mail exchange, 25 roughly?</p>	<p>Page 77</p> <p>1 I want -- I was reviewing the literature, I 2 told him exactly the truth. I was reviewing 3 the literature, and I wanted to understand 4 why these two papers had different 5 conclusions with exactly the same cohort, 6 exactly the same methods. 7 Q. Okay. So Dr. Liew didn't 8 realize you were working for one side of a 9 litigation when you contacted him, right? 10 MR. SNIDOW: Objection. 11 Objection to the form. 12 You can answer. 13 THE WITNESS: I didn't disclose 14 to Dr. Liew that I was working on 15 litigation. I'm pretty sure he 16 responded honestly and to the best of 17 his knowledge. 18 We had a very nice, open 19 discussion, and clearly I was not -- I 20 was not may -- putting him in a trap, 21 and that I'm not using his e-mail 22 exchange in my documentation, as you 23 can understand. 24 I just wanted to be sure that 25 what I understood myself was right,</p>

Page 78

1 and I wanted to be sure that -- it was
 2 really a sanity check. I wanted to be
 3 sure that I'm -- I was not completely
 4 out of my mind to think that two
 5 people -- I really give a lot of
 6 respect to people who write papers.
 7 QUESTIONS BY MR. MURDICA:
 8 Q. Okay.
 9 A. I wanted to make sure that -- I
 10 want to make sure that if two papers by the
 11 same person say that this person doesn't
 12 need -- since you mentioned neurology, that
 13 this person doesn't need a neurologist. And
 14 I didn't want to send them a neurologist
 15 before understanding what was going on.
 16 Q. Dr. Baccarelli, did you -- did
 17 you ask anyone else any questions in
 18 formulating your opinions here for that type
 19 of sanity check, to use your words, to make
 20 sure you weren't off the deep end?
 21 MR. SNIDOW: Objection to the
 22 form.
 23 I think he was talking about
 24 the authors, not him.
 25 But go ahead.

Page 79

1 MR. MURDICA: Okay. All right.
 2 That -- hang on.
 3 We're just not going to do
 4 this. I said it again. You're saying
 5 asked and answered. Now you're
 6 telling him how to testify.
 7 I don't know where you learned
 8 to do this, but it's not something
 9 we're going to do. I said that. This
 10 is it. This is your last warning. I
 11 will terminate the deposition and call
 12 Judge Cote.
 13 MR. SNIDOW: Okay. For the
 14 record, I don't think that your
 15 questions have been appropriate. As I
 16 said, there were a couple of them,
 17 happy to have Judge Cote review. She
 18 can decide whether or not she thinks
 19 they're appropriate questions.
 20 I will limit it to asked and
 21 answered. For the last one, Jim, and
 22 I mean this, I thought that you
 23 misunderstood his answer.
 24 MR. MURDICA: Okay. Well, then
 25 maybe I'm doing a bad job, but that's

Page 80

1 not for you to say. You sit there and
 2 you say objection to form or you say
 3 nothing. And if you say anything
 4 other than that, we're stopping this.
 5 MR. SNIDOW: Again,
 6 Dr. Baccarelli, you can ignore all
 7 that.
 8 THE WITNESS: Absolutely.
 9 QUESTIONS BY MR. MURDICA:
 10 Q. Dr. Baccarelli, are you aware
 11 of anyone else working on acetaminophen
 12 exposure, neurodevelopmental outcomes in
 13 pregnancy, that has unpublished works?
 14 A. I -- I'm -- I don't think so.
 15 Q. Okay. Because you testified
 16 that you -- other than trying to get your
 17 expert report in this litigation published,
 18 you don't have any ongoing studies on
 19 acetaminophen, correct?
 20 A. That is correct. I don't think
 21 we are writing other papers right now.
 22 Q. Okay. And you're not aware of
 23 anybody else writing papers on acetaminophen
 24 and pregnancy outcomes, correct?
 25 A. I think that is right.

Page 81

1 Q. Okay. You haven't been asked
 2 to review anybody else's work on
 3 acetaminophen and pregnancy outcomes, have
 4 you?
 5 A. What do you mean "anybody
 6 else's"?
 7 Q. Other than the doctors and
 8 students in your group, like Mr. -- Dr. Baker
 9 and Dr. Pearson, you haven't been asked by
 10 anyone outside the Mailman School of Public
 11 Health to review their work on acetaminophen,
 12 have you?
 13 A. So Dr. Pearson is not in my
 14 group. Dr. Pearson was an independent
 15 scientist and -- who works independently for
 16 me. He's in my department, so I have -- he
 17 reports to the school, so -- I mean, he's in
 18 my unit, but he's independent from me.
 19 And as far as I remember, no.
 20 But, I mean, if there is any study I'm
 21 forgetting, I'm happy to discuss. I really
 22 have nothing to hide here.
 23 Q. Dr. Baccarelli, we went through
 24 the people that you've talked to about your
 25 opinions here, the doctors that you've talked

<p style="text-align: right;">Page 82</p> <p>1 to about your opinions, right?</p> <p>2 A. Correct.</p> <p>3 Q. Are there any others that you</p> <p>4 haven't mentioned?</p> <p>5 A. There might be. If you want to</p> <p>6 bring them up, I'm happy. I mean, I don't</p> <p>7 know.</p> <p>8 I spoke openly about what I'm</p> <p>9 doing here. I spoke openly about my</p> <p>10 opinions. So I spoke to a few people.</p> <p>11 And many times it happens over</p> <p>12 coffee, over drinks. So, you know, I'm</p> <p>13 working on my own on this one, so I -- I'm</p> <p>14 not -- I don't have team meetings like I do</p> <p>15 for my papers where I speak to people. I</p> <p>16 don't keep a record to whom I speak to at</p> <p>17 conferences or over coffee.</p> <p>18 Q. Dr. Baccarelli, does Dr. Baker</p> <p>19 know you're doing this?</p> <p>20 A. Yes, he does.</p> <p>21 Q. And does anyone else in your</p> <p>22 group know you're doing this?</p> <p>23 A. Yes, my assistant, my team</p> <p>24 members, Dr. Laue.</p> <p>25 Q. Okay. Have you spoken to</p>	<p style="text-align: right;">Page 84</p> <p>1 Q. And where is -- where is Ana,</p> <p>2 Dr. Ana?</p> <p>3 A. Dr. Ana Navas-Acien is at the</p> <p>4 Mailman School of Public Health at Columbia.</p> <p>5 Q. At Mailman. Okay.</p> <p>6 Other than family and personal</p> <p>7 friends, have you spoken with any other</p> <p>8 non-doctors about your opinions here?</p> <p>9 MR. SNIDOW: Objection to the</p> <p>10 form.</p> <p>11 You can answer.</p> <p>12 THE WITNESS: I didn't speak</p> <p>13 with family and personal friends, to</p> <p>14 be honest.</p> <p>15 QUESTIONS BY MR. MURDICA:</p> <p>16 Q. Okay.</p> <p>17 A. My mom doesn't know my opinion</p> <p>18 on this.</p> <p>19 Q. I was trying to make the</p> <p>20 question easier, Doctor.</p> <p>21 Dr. Baccarelli, have you spoken</p> <p>22 with anyone else you can think of, whether</p> <p>23 they're doctors or not, about your</p> <p>24 conclusions here?</p> <p>25 A. As I mentioned, I spoke with a</p>
<p style="text-align: right;">Page 83</p> <p>1 anyone else outside of Columbia that you</p> <p>2 remember specifically?</p> <p>3 A. Dr. Takser.</p> <p>4 Q. What's the last name?</p> <p>5 A. Dr. Larissa Takser.</p> <p>6 Q. Does anyone else come to mind?</p> <p>7 A. I'm terrible at names. I'm</p> <p>8 sure I spoke with a colleague at the CDC that</p> <p>9 I met at the Society of Toxicology last year.</p> <p>10 I can't remember his name.</p> <p>11 Q. Okay.</p> <p>12 A. He's at the EPA, sorry, not</p> <p>13 CDC. I can draw a sketch of his face, but I</p> <p>14 can't really remember his name.</p> <p>15 Q. Dr. Baccarelli, how about --</p> <p>16 have you spoken with any epidemiologists</p> <p>17 about your opinions here?</p> <p>18 A. Again, if you're asking whether</p> <p>19 I spoke about how I formulated the opinions,</p> <p>20 no. This is the work I've done on my own.</p> <p>21 I spoke with other</p> <p>22 epidemiologists about my conclusions, for</p> <p>23 instance, Dr. Ana Navas-Acien.</p> <p>24 Q. Any others?</p> <p>25 A. Not that I remember.</p>	<p style="text-align: right;">Page 85</p> <p>1 lot of people. And, again, happy to -- if</p> <p>2 you have any questions about who in</p> <p>3 particular -- and I want to reiterate that</p> <p>4 these are my conclusions based on my</p> <p>5 opinions. I check some details with other</p> <p>6 people, but it's really checking other --</p> <p>7 some details.</p> <p>8 I didn't rely on anyone else's</p> <p>9 opinion to formulate my opinion. I relied on</p> <p>10 my own, everything I can verify.</p> <p>11 And of course science is based</p> <p>12 on trust. We want -- we want to make sure if</p> <p>13 someone publish a paper, I'm not going to</p> <p>14 redo the experiment.</p> <p>15 Q. If someone publishes a paper,</p> <p>16 you're not going to do what?</p> <p>17 A. I'm not going to -- let's say</p> <p>18 someone publishes a paper in the -- in the --</p> <p>19 in the Danish cohort. It's not my job to get</p> <p>20 their data and redo that analysis. Correct.</p> <p>21 Q. Okay. Dr. Baccarelli, did</p> <p>22 you -- do you recall speaking to any</p> <p>23 financial analysts about your opinion -- your</p> <p>24 conclusions here?</p> <p>25 A. I certainly didn't do that.</p>

Page 86

1 Q. Okay.

2 A. Oh, one second.

3 I spoke -- I spoke to a

4 consulting firm who were interested in

5 hearing about the state of the art and the

6 science on acetaminophen and

7 neurodevelopment. There is one consulting

8 firm who contacted me. They wanted to --

9 they wanted to have -- to hear my opinion.

10 Q. And when was that?

11 A. Must have been like in

12 January 2023.

13 Q. So this year?

14 A. Yeah.

15 Q. After you were working on the

16 litigation for the plaintiffs?

17 A. About the same time. I can't

18 remember whether it was before or after.

19 Q. And what did you tell them?

20 A. I tell them -- I tell them that

21 I was incredibly concerned that there was a

22 huge problem here, and that whatever they

23 wanted to do -- they didn't explain why --

24 they told me they were working with hedge

25 funds. They were a consulting firm working

Page 87

1 with hedge funds, and they wanted to have

2 opinion from scientists about what was going

3 on.

4 And I told them I was

5 incredibly concerned and that I was

6 reasonably sure that there is a problem, that

7 acetaminophen during pregnancy causes ADHD

8 and autism.

9 Q. Okay. Did they tell you they

10 were working for investors?

11 A. Yes, they did.

12 Q. And did they tell you -- were

13 they asking you about acetaminophen or were

14 they asking you about Tylenol?

15 MR. SNIDOW: Objection to the

16 form.

17 THE WITNESS: They were asking

18 me about acetaminophen.

19 QUESTIONS BY MR. MURDICA:

20 Q. So you don't -- sitting here

21 today, Dr. Baccarelli, you don't know what

22 their investment was in that they were -- you

23 don't know the investment for which they were

24 calling you, right?

25 A. I was given no information

Page 88

1 except that they were working for a -- for a

2 financial analyst, for a group of financial

3 analysts, I believe.

4 Q. I take it you didn't disclose

5 that you were being paid by plaintiffs'

6 lawyers at the time?

7 MR. SNIDOW: Objection to the

8 form.

9 You can answer.

10 THE WITNESS: I am unsure

11 whether -- I don't think I had been

12 paid at that point. I don't think I

13 put hours into the -- into the work.

14 It might have been even before I was

15 retained.

16 At the same time, I was not

17 made aware that I had to disclose any

18 of these relationships. They asked me

19 to be an expert, and I -- it was a

20 phone call of 40 minutes, and they

21 wanted my opinion as a scientist.

22 They didn't ask me anything about any

23 conflicts.

24 QUESTIONS BY MR. MURDICA:

25 Q. And you don't -- because you

Page 89

1 don't know whether you were hired in this

2 litigation at that point, you don't know if

3 you told them, or you're sure that you did

4 not tell them?

5 MR. SNIDOW: Objection to the

6 form.

7 THE WITNESS: I can't remember

8 whether I told them. And I'm -- I

9 certainly don't remember being an

10 issue.

11 QUESTIONS BY MR. MURDICA:

12 Q. Okay. Do you know if you had

13 signed the protective order in this matter at

14 the time?

15 A. I don't know.

16 Q. Okay. Do you know what

17 material nonpublic information is?

18 A. I'm not sure. If you want

19 to...

20 Q. You shared with them your

21 opinions you're sharing with us now, for

22 40 minutes, correct?

23 A. I share about the same opinion.

24 Of course, I haven't -- I hadn't done at that

25 point in time literature review.

Page 90

1 And again, I need to say, I was
 2 blown away by the literature. The literature
 3 is so clear that it literally spoke to me.
 4 At the time I hadn't done this
 5 work, so they -- my opinion certainly was
 6 less well-informed than it is now.
 7 Q. Dr. Baccarelli, did I ask you
 8 that question?
 9 MR. SNIDOW: Objection to the
 10 form.
 11 THE WITNESS: I --
 12 MR. SNIDOW: Hold on.
 13 You can answer.
 14 THE WITNESS: I thought you
 15 did. Perhaps I didn't hear you well.
 16 QUESTIONS BY MR. MURDICA:
 17 Q. I'm sorry?
 18 A. Go ahead.
 19 Q. Dr. Baccarelli, you're not a
 20 teratologist by training, correct?
 21 A. I didn't train specifically in
 22 teratology, but I took plenty of teratology
 23 classes during my doctorate and during my
 24 medical school. And I -- again, I published
 25 more than 300 papers on the effects of

Page 91

1 toxicants on mothers and their children.
 2 Q. Good. So you can help us then.
 3 What is the -- what is the
 4 exact time during pregnancy that a fetus is
 5 most susceptible to a toxicant inducing ADHD
 6 in the child?
 7 MR. SNIDOW: Objection to the
 8 form.
 9 THE WITNESS: The -- as I wrote
 10 in my report, pregnancy is a
 11 susceptible window. As long as you
 12 have an embryo, as long as you have a
 13 neuron in -- in the womb of the
 14 mother, the -- the fetus is
 15 susceptible. So the entire pregnancy
 16 is susceptible.
 17 QUESTIONS BY MR. MURDICA:
 18 Q. Okay. Is that the same for
 19 autism as well, that your --
 20 Dr. Baccarelli's, testimony is that an
 21 exposure at any time during the pregnancy can
 22 cause autism in the offspring?
 23 MR. SNIDOW: Objection to the
 24 form.
 25 You can answer.

Page 92

1 THE WITNESS: What I'm saying
 2 is that -- as I said in my report, I
 3 studied the entire pregnancy, and
 4 there is evidence that entire
 5 pregnancy can be susceptible. So that
 6 is something that is really clear
 7 happens, that exposure during
 8 pregnancy -- that the brain -- the
 9 brain of the fetus is susceptible to
 10 Tylenol or to any other environmental
 11 exposures and other toxicants
 12 throughout the pregnancy.
 13 QUESTIONS BY MR. MURDICA:
 14 Q. Right. So I want to make sure
 15 I'm clear, because I wasn't asking you about
 16 Tylenol.
 17 A. Okay. Thank you.
 18 Q. Dr. Baccarelli, prior to being
 19 paid for your opinions here, you've studied
 20 other pregnancy exposures and
 21 neurodevelopmental outcomes, right?
 22 A. Correct.
 23 Q. Okay. And is there any period,
 24 particular period, during the pregnancy when
 25 the fetus is most susceptible to adverse

Page 93

1 neurodevelopmental outcomes?
 2 A. In general, we believe that the
 3 entire pregnancy -- during the entire
 4 pregnancy, the fetus brain is susceptible.
 5 And of course, I mean, depending on the type
 6 of chemicals, there might be different types
 7 of susceptibility. But in general, the
 8 susceptibility is -- continues the entire
 9 pregnancy.
 10 So that is -- that is my
 11 testimony.
 12 Q. Okay. And that's the same for
 13 autism or ADHD? There's no particular period
 14 during the pregnancy that is more likely to
 15 cause autism or ADHD, correct?
 16 MR. SNIDOW: Objection to the
 17 form.
 18 You can answer.
 19 THE WITNESS: Again, in my --
 20 in my report I focus on pregnancy as a
 21 whole. Whether there is a susceptible
 22 window, that -- that is interesting,
 23 but I don't think that the matter is
 24 settled yet.
 25

<p style="text-align: right;">Page 94</p> <p>1 QUESTIONS BY MR. MURDICA:</p> <p>2 Q. Okay. So an exposure --</p> <p>3 according to Dr. Baccarelli, an exposure two</p> <p>4 days after conception can cause autism in a</p> <p>5 child, correct?</p> <p>6 MR. SNIDOW: Objection to form.</p> <p>7 THE WITNESS: I didn't say</p> <p>8 that. As you read in my report, I</p> <p>9 said that -- I wrote in my report that</p> <p>10 there is more convincing evidence for</p> <p>11 exposures that are 20-day -- 28 days</p> <p>12 or longer. So you can understand that</p> <p>13 if it's 28 days or longer, it's not</p> <p>14 even possible that your question</p> <p>15 stands.</p> <p>16 QUESTIONS BY MR. MURDICA:</p> <p>17 Q. Okay. Dr. Baccarelli, though,</p> <p>18 you're not -- you're not answering my</p> <p>19 question, because you're now answering about</p> <p>20 28 days of acetaminophen exposure, correct?</p> <p>21 MR. SNIDOW: Objection to the</p> <p>22 form.</p> <p>23 You can answer.</p> <p>24 THE WITNESS: I was making an</p> <p>25 example how -- what you are trying to</p>	<p style="text-align: right;">Page 96</p> <p>1 there are neurons. And the exposure</p> <p>2 becomes toxicants when there is</p> <p>3 neurulation.</p> <p>4 So it's a great question when</p> <p>5 it starts, but it's not the question</p> <p>6 that I set out to answer.</p> <p>7 What I set out to answer was,</p> <p>8 is there reasonable evidence if people</p> <p>9 have prolonged use of a chemical, in</p> <p>10 this case acetaminophen, during</p> <p>11 pregnancy, whether that makes sense</p> <p>12 that would -- that would cause --</p> <p>13 would be reasonably associated with --</p> <p>14 reasonably causally related to ADHD</p> <p>15 and ASD and other neurodevelopmental</p> <p>16 disorders during pregnancy.</p> <p>17 So the pregnancy is a whole</p> <p>18 lot -- by the way, we haven't yet</p> <p>19 found a way to do X-rays of the -- of</p> <p>20 a woman every hour and see when a</p> <p>21 chemical starts to hit the embryo or</p> <p>22 the -- or the fetus. So I think your</p> <p>23 question is interesting, but I --</p> <p>24 I've -- it's not -- it's not -- it's</p> <p>25 not a focus of my -- of my interests.</p>
<p style="text-align: right;">Page 95</p> <p>1 say I'm saying is completely different</p> <p>2 from what I wrote.</p> <p>3 QUESTIONS BY MR. MURDICA:</p> <p>4 Q. Okay. And I am not asking you</p> <p>5 about acetaminophen exposure.</p> <p>6 A. Okay.</p> <p>7 Q. You told me twice today that</p> <p>8 you are -- you have expertise in toxicant</p> <p>9 exposure during pregnancy that has nothing to</p> <p>10 do with acetaminophen and neurodevelopmental</p> <p>11 outcomes, correct?</p> <p>12 A. I have experience with many</p> <p>13 different toxicants, including toxicants --</p> <p>14 other toxicants that have a lot to do with</p> <p>15 neurodevelopment.</p> <p>16 Q. Okay. So my question for you</p> <p>17 is, can a toxicant exposure on day 2</p> <p>18 post-conception cause autism in a child?</p> <p>19 MR. SNIDOW: Objection to the</p> <p>20 form. Asked and answered.</p> <p>21 THE WITNESS: So in order</p> <p>22 for -- in order for a toxicant to</p> <p>23 cause exposure, we need certain</p> <p>24 developmental stages. So definitely</p> <p>25 the exposure becomes toxicant when</p>	<p style="text-align: right;">Page 97</p> <p>1 QUESTIONS BY MR. MURDICA:</p> <p>2 Q. So here's my question then,</p> <p>3 Dr. Baccarelli.</p> <p>4 Can Dr. Baccarelli answer</p> <p>5 whether an exposure on day 2 post-conception</p> <p>6 can cause autism in a child? Is it even</p> <p>7 possible?</p> <p>8 MR. SNIDOW: Objection to the</p> <p>9 form.</p> <p>10 QUESTIONS BY MR. MURDICA:</p> <p>11 Q. According to Dr. Baccarelli.</p> <p>12 MR. SNIDOW: Objection to the</p> <p>13 form.</p> <p>14 You can answer.</p> <p>15 THE WITNESS: That is a</p> <p>16 question I -- I'm not even interested</p> <p>17 to answer. I mean, it's a question</p> <p>18 that scientifically makes no sense.</p> <p>19 I'm so sorry, it's a question</p> <p>20 scientifically we are -- we are not</p> <p>21 doing a forensic on every minute of</p> <p>22 someone's pregnancy. I think you</p> <p>23 appreciate that.</p> <p>24 QUESTIONS BY MR. MURDICA:</p> <p>25 Q. Can you answer my question,</p>

<p style="text-align: right;">Page 98</p> <p>1 Dr. Baccarelli?</p> <p>2 MR. SNIDOW: Objection to the</p> <p>3 form.</p> <p>4 THE WITNESS: Again, I don't</p> <p>5 want to answer your question because I</p> <p>6 don't think it makes sense nor has</p> <p>7 relevance to our discussion today.</p> <p>8 QUESTIONS BY MR. MURDICA:</p> <p>9 Q. Dr. Baccarelli, in the studies</p> <p>10 that you are relying on, many of them were</p> <p>11 observational studies, correct?</p> <p>12 A. All of them.</p> <p>13 Q. Okay. And the exposure to</p> <p>14 acetaminophen in most of them was recorded by</p> <p>15 questionnaire, correct?</p> <p>16 A. That is correct.</p> <p>17 Q. Retrospective questionnaire,</p> <p>18 correct?</p> <p>19 A. I want to -- I want to push</p> <p>20 back on that. They were not retrospective.</p> <p>21 They were collected during pregnancy or just</p> <p>22 at the end of pregnancy. It's the best way</p> <p>23 to collect information about acetaminophen</p> <p>24 during pregnancy. Most of the studies</p> <p>25 measure -- asked the women during pregnancy.</p>	<p style="text-align: right;">Page 100</p> <p>1 me the paper.</p> <p>2 Q. Dr. Baccarelli, you don't know,</p> <p>3 sitting here, that none of those cohort</p> <p>4 studies identified the day or even week</p> <p>5 during pregnancy when the acetaminophen was</p> <p>6 taken, correct?</p> <p>7 MR. SNIDOW: Objection to the</p> <p>8 form.</p> <p>9 Dr. Baccarelli, you can answer.</p> <p>10 THE WITNESS: There is a</p> <p>11 multitude of approaches that are being</p> <p>12 used to study -- to study the exposure</p> <p>13 to acetaminophen, and many of them are</p> <p>14 detailed. Many of them are collecting</p> <p>15 acetaminophen at 18 weeks, 32, end of</p> <p>16 pregnancy. Many of them have</p> <p>17 information about the trimester.</p> <p>18 QUESTIONS BY MR. MURDICA:</p> <p>19 Q. And, Dr. Baccarelli, I don't</p> <p>20 think you answered my question.</p> <p>21 Let's take DNBC, right? There</p> <p>22 was an interview at 18 weeks, correct?</p> <p>23 A. I'll be happy to review the</p> <p>24 paper if you have it.</p> <p>25 Q. Whenever it was interviewed --</p>
<p style="text-align: right;">Page 99</p> <p>1 For instance, I believe the</p> <p>2 Danish cohort asked about acetaminophen at 18</p> <p>3 weeks and 32 weeks. So this is information</p> <p>4 that usually not even physicians have.</p> <p>5 Q. Physicians don't normally have</p> <p>6 that information on drug exposure.</p> <p>7 Is that your testimony?</p> <p>8 A. No. Go ahead.</p> <p>9 Q. Okay. Dr. Baccarelli, can you</p> <p>10 tell for any given patient -- let's just take</p> <p>11 the DNBC.</p> <p>12 You know what that is, right?</p> <p>13 A. Yeah.</p> <p>14 Q. What is it?</p> <p>15 A. It's the Danish birth cohort.</p> <p>16 Q. Danish National Birth Cohort?</p> <p>17 A. Correct.</p> <p>18 Q. Okay. You don't know, and</p> <p>19 there's no way for you to find out, when,</p> <p>20 during the first 18 weeks or the second 16</p> <p>21 weeks, a mother took a single pill of</p> <p>22 acetaminophen, correct?</p> <p>23 A. And I'll be happy -- you know,</p> <p>24 I reviewed hundreds of studies. I'll be</p> <p>25 happy to discuss this study if you can give</p>	<p style="text-align: right;">Page 101</p> <p>1 whenever the interview occurred, the</p> <p>2 interview asked, among other things, if there</p> <p>3 was exposure to acetaminophen, correct?</p> <p>4 MR. SNIDOW: Objection to the</p> <p>5 form.</p> <p>6 You can answer.</p> <p>7 THE WITNESS: The studies were</p> <p>8 conducted to study acetaminophen, and</p> <p>9 they exactly, precisely, asked</p> <p>10 whether they measured -- whether the</p> <p>11 women had taken acetaminophen.</p> <p>12 QUESTIONS BY MR. MURDICA:</p> <p>13 Q. And that's all -- they don't</p> <p>14 know -- you don't know and the scientists who</p> <p>15 ran the cohorts don't know the days on which</p> <p>16 the women took acetaminophen or for how long</p> <p>17 a particular use of acetaminophen lasted,</p> <p>18 correct?</p> <p>19 MR. SNIDOW: Objection to the</p> <p>20 form.</p> <p>21 Just hold on. You can answer.</p> <p>22 THE WITNESS: There are many</p> <p>23 studies in the literature that looked</p> <p>24 at specific trimesters of pregnancy.</p> <p>25 They asked whether acetaminophen was</p>

<p>Page 102</p> <p>1 taken in the first trimester, the 2 second or the third. 3 And by the way, if you want to 4 confuse a woman, you're going to ask 5 them, please tell me in -- tell me 6 when you got -- you got acetaminophen 7 on that day. 8 So if you want low quality 9 data, you should follow the approach 10 you discussed. 11 I want to also note that -- 12 also particularly point out that you 13 might be suggesting that there is 14 exposure misclassification. 15 So let's say there is only one 16 day in the entire pregnancy. Let's 17 say really that these are women that 18 are vulnerable only one hour during 19 their pregnancy, which is what you're 20 suggesting. And it's a suggestion 21 that is interesting, but let's say -- 22 let's say it's just something -- 23 something. 24 And there are like 10,000 hours 25 of pregnancy, and only one hour is</p>	<p>Page 104</p> <p>1 autism. 2 MR. SNIDOW: Objection to the 3 form. 4 Dr. Baccarelli -- 5 THE WITNESS: Let me -- you 6 said -- 7 MR. SNIDOW: Sorry. Sorry. 8 Objection to the form. 9 You can answer. 10 THE WITNESS: You said two 11 things. A, I'm not defensive. I'm 12 just trying to explain how things 13 stand. 14 And I'm sorry. If you say 15 things that scientifically make no 16 sense, I need to tell the truth. 17 Your question was? I can't 18 remember. 19 QUESTIONS BY MR. MURDICA: 20 Q. My question was, 21 Dr. Baccarelli, I'm the one asking you if you 22 can identify the window of exposure to a 23 pregnancy to acetaminophen that could trigger 24 the outcome of autism. 25 A. As I mentioned in my -- in my</p>
<p>Page 103</p> <p>1 susceptible. There is only one window 2 the brain can be hit. So even more 3 remarkable that we are finding 4 associations. 5 I'm particularly impressed by 6 the fact that, as you say, provided -- 7 I mean, not granted, but assuming that 8 what you say is right, there is a 9 narrow window, which is not true, of 10 susceptibility, the fact that we are 11 finding such a strong effect is even 12 more remarkable. 13 So if you -- what you say is 14 true, perhaps the risk is not 15 30 percent but it's by 1,000 percent, 16 because we are classifying as an 17 exposed people who would be exposed. 18 And again, the window is not 19 that narrow, so, please -- 20 QUESTIONS BY MR. MURDICA: 21 Q. Dr. Baccarelli, I appreciate 22 you're being defensive about this, but I'm 23 the one asking you if you can identify the 24 window of exposure for acetaminophen in a 25 pregnancy that can result in the outcome of</p>	<p>Page 105</p> <p>1 report, there are many mechanisms. I 2 reviewed -- I've reviewed several mechanisms 3 that are plausible. 4 The acetaminophen first crosses 5 the placental and enter the fetal brain. 6 Acetaminophen increases 7 oxidative stress. 8 Acetaminophen changes the 9 prostaglandin system. 10 Acetaminophen often alters the 11 endocannabinoid system, the BDNF. Has 12 endocrine effects and epigenetic effects. 13 You started by talking about 14 teratology, so you might think that for 15 teratology the window is a certain window. 16 But for these other mechanisms, the windows 17 change. 18 So the entire pregnancy can be 19 vulnerable. And that is incredibly 20 well-established. We have lots of evidence 21 that any toxicant that affects the brain can 22 affect throughout the entire pregnancy. That 23 is incontrovertible. 24 Q. Okay. 25 MR. SNIDOW: Hold on, Jim.</p>

Page 106

1 Just -- we've been going for
 2 90 minutes, minus however long our --
 3 MR. MURDICA: I do want to get
 4 an answer to my question first, and
 5 then I'll -- then we can take a break.
 6 MR. SNIDOW: Okay.
 7 MR. MURDICA: Okay.
 8 MR. SNIDOW: Well --
 9 MR. MURDICA: Because I didn't
 10 get an answer to the question. So I'm
 11 going to reask the same question.
 12 MR. SNIDOW: All right. So
 13 hold on.
 14 I think you did, just for the
 15 record, but I'm happy to let you ask
 16 one more time, and then we can take a
 17 break.
 18 MR. MURDICA: Yeah.
 19 MR. SNIDOW: Thank you.
 20 QUESTIONS BY MR. MURDICA:
 21 Q. I'm going to read back what I
 22 just asked you.
 23 A. Okay.
 24 Q. Dr. Baccarelli, can you
 25 identify the window of exposure to a

Page 107

1 pregnancy of acetaminophen that can trigger
 2 the outcome of autism?
 3 MR. SNIDOW: Okay. Objection
 4 to the form.
 5 You can answer, Dr. Baccarelli.
 6 THE WITNESS: So, again, your
 7 question implies that such a window
 8 exists and has been identified.
 9 I replied by saying that
 10 pregnancy as a whole is a window --
 11 QUESTIONS BY MR. MURDICA:
 12 Q. Okay.
 13 A. -- and is associated with this
 14 very well-known. And there may be parts of
 15 the pregnancy that are more susceptible, but
 16 the entire pregnancy is a target.
 17 MR. MURDICA: Okay. Thank you,
 18 Doctor.
 19 MR. SNIDOW: Thank you.
 20 Can we go off the record?
 21 MR. MURDICA: Yep.
 22 VIDEOGRAPHER: The time right
 23 now is 10:01 a.m. We are off the
 24 record.
 25 (Off the record at 10:01 a.m.)

Page 108

1 VIDEOGRAPHER: The time right
 2 now is 10:17 a.m. We are back on the
 3 record.
 4 THE WITNESS: Thank you.
 5 QUESTIONS BY MR. MURDICA:
 6 Q. Dr. Baccarelli, welcome back.
 7 Are you ready to proceed?
 8 A. Absolutely.
 9 (Baccarelli Exhibit 89 marked
 10 for identification.)
 11 QUESTIONS BY MR. MURDICA:
 12 Q. All right. We are going to
 13 mark an exhibit. Our first one.
 14 Dr. Baccarelli, you have in
 15 front of you what's been marked as
 16 Exhibit 89. The reason for that is that
 17 there were 88 exhibits in the other expert
 18 depositions, so that's why it says that, in
 19 case you're curious.
 20 Do you recognize what's in
 21 front of you?
 22 A. Yes.
 23 Q. And do you recall my questions
 24 and your answers about contact with an
 25 investment advisor?

Page 109

1 A. Yes.
 2 MR. SNIDOW: Objection to the
 3 form.
 4 QUESTIONS BY MR. MURDICA:
 5 Q. All right. And is this, what's
 6 in Exhibit 89, what you were referring to?
 7 A. So this person is someone
 8 who -- is someone -- is -- I think the person
 9 who contacted me for that situation with --
 10 emphasized they were looking for information
 11 about the evidence available on acetaminophen
 12 and ADHD and ASD and neurodevelopmental
 13 disorders.
 14 Q. And had you ever -- you see the
 15 name is AlphaSites, right?
 16 A. AlphaSites, that is correct.
 17 Q. Yeah.
 18 Had you ever worked with them
 19 before?
 20 A. No.
 21 Q. Did they pay you for your
 22 interview?
 23 A. Yes, they -- I believe they
 24 paid me \$500.
 25 Q. Okay. And this e-mail was from

<p style="text-align: right;">Page 110</p> <p>1 someone named Elsbeth Caulo, but you also</p> <p>2 spoke with someone named Alvaro Garcia,</p> <p>3 correct?</p> <p>4 A. Correct.</p> <p>5 Q. Was Alvaro Garcia the 40-minute</p> <p>6 conversation that you had that you testified</p> <p>7 about earlier?</p> <p>8 A. Alvaro Garcia was the person</p> <p>9 who set it up, and I believe that he was in</p> <p>10 the conversation. I honestly cannot recall</p> <p>11 the names of the people he set me up with.</p> <p>12 Q. Okay. And if you look on the</p> <p>13 bottom of the page that ends in 240, which is</p> <p>14 the second page of the e-mail --</p> <p>15 A. Uh-huh.</p> <p>16 Q. -- you see it's actually asking</p> <p>17 about Tylenol and autism, not acetaminophen</p> <p>18 and autism, right?</p> <p>19 MR. SNIDOW: Objection to the</p> <p>20 form.</p> <p>21 THE WITNESS: I -- if you can</p> <p>22 explain to me what is the difference.</p> <p>23 QUESTIONS BY MR. MURDICA:</p> <p>24 Q. Do you understand there's 600</p> <p>25 different brands of acetaminophen?</p>	<p style="text-align: right;">Page 112</p> <p>1 Q. That is the information that</p> <p>2 you had when you chose to take the phone call</p> <p>3 from Mr. Garcia, correct?</p> <p>4 A. Yes, absolutely.</p> <p>5 Q. Okay. And you have no idea,</p> <p>6 Dr. Baccarelli, what that's referring to</p> <p>7 about an institutional investor client asking</p> <p>8 about Tylenol?</p> <p>9 MR. SNIDOW: Objection to form.</p> <p>10 THE WITNESS: I don't have any</p> <p>11 idea.</p> <p>12 QUESTIONS BY MR. MURDICA:</p> <p>13 Q. Okay. Do you know who makes</p> <p>14 Tylenol?</p> <p>15 A. I guess that is Johnson &</p> <p>16 Johnson.</p> <p>17 Q. Well, it's a former company of</p> <p>18 the Johnson & Johnson family, but at the time</p> <p>19 that this is being asked, it was a Johnson &</p> <p>20 Johnson Company.</p> <p>21 A. Uh-huh.</p> <p>22 Q. So you don't --</p> <p>23 MR. SNIDOW: Objection.</p> <p>24 QUESTIONS BY MR. MURDICA:</p> <p>25 Q. You don't -- sitting here</p>
<p style="text-align: right;">Page 111</p> <p>1 A. Absolutely. I also understand</p> <p>2 that Tylenol and acetaminophen are terms that</p> <p>3 are used inter-exchangeable.</p> <p>4 So I also understand that along</p> <p>5 the 600 formulations, acetaminophen is always</p> <p>6 present. Acetaminophen is always present in</p> <p>7 all the 600 formulations that you mentioned.</p> <p>8 Q. Right.</p> <p>9 But one of them in particular</p> <p>10 is Tylenol, correct?</p> <p>11 A. That is correct.</p> <p>12 Q. Okay.</p> <p>13 A. It's the most common, so that</p> <p>14 people often speaks about Tylenol when they</p> <p>15 really mean acetaminophen.</p> <p>16 Q. Okay. And you don't know</p> <p>17 that -- okay. Well, let's turn to the last</p> <p>18 page -- to the page that ends in 241.</p> <p>19 A. Uh-huh.</p> <p>20 Q. What Elsbeth Caulo told you was</p> <p>21 that she, or he, was working on behalf of an</p> <p>22 institutional investor client.</p> <p>23 A. Uh-huh.</p> <p>24 Q. Do you see that?</p> <p>25 A. Yes, that I understand.</p>	<p style="text-align: right;">Page 113</p> <p>1 today, you don't understand the</p> <p>2 ramifications, the stock ramifications, that</p> <p>3 they were asking you about?</p> <p>4 MR. SNIDOW: Objection to the</p> <p>5 form.</p> <p>6 THE WITNESS: I -- if you want</p> <p>7 to explain to me what are the</p> <p>8 ramifications, I'm happy -- I said in</p> <p>9 all honesty what I saw in the</p> <p>10 literature, and I have no problem</p> <p>11 doing that.</p> <p>12 If you had contacted me, I</p> <p>13 would have told you the same.</p> <p>14 QUESTIONS BY MR. MURDICA:</p> <p>15 Q. Well, Doctor, can you tell us</p> <p>16 exactly what day you were hired by the</p> <p>17 plaintiffs' lawyers?</p> <p>18 A. No. I don't remember that.</p> <p>19 Q. Can you tell us the day of your</p> <p>20 first contact with the plaintiffs' lawyers?</p> <p>21 A. It was sometimes in January.</p> <p>22 Q. Okay. Do you keep billing</p> <p>23 records?</p> <p>24 A. Yes, I do.</p> <p>25 Q. Do you have them with you?</p>

Page 114

1 A. No.

2 Q. Will the billing records

3 reflect the first contact you ever had with

4 plaintiffs' lawyers?

5 A. I assume so.

6 Q. You knew at this point in time

7 that Mr. Pearson -- Dr. Pearson, who you say

8 is not part of your group, was working for

9 the plaintiffs' lawyers, right?

10 A. No, I didn't.

11 Q. You didn't.

12 So when you referred these

13 investment advisors to Dr. Pearson, you

14 didn't know that he was working with the

15 plaintiffs' lawyers?

16 A. I did not know he was working

17 with the plaintiffs' lawyers.

18 Q. Okay. Did you know anyone who

19 was working with the plaintiffs' lawyers in

20 January 2023?

21 A. No. Absolutely not.

22 Q. So you thought you were the

23 only one helping them?

24 MR. SNIDOW: Objection to the

25 form.

Page 115

1 THE WITNESS: No. I was told

2 by your colleagues here that there

3 were other experts. I didn't know who

4 they were.

5 I learned from Dr. Pearson he

6 was working with the same firms at a

7 meeting we were both together, I

8 believe in April 2023. He mentioned

9 that he had been retained, and he was

10 working with -- on this case.

11 QUESTIONS BY MR. MURDICA:

12 Q. Was that April 2023 meeting in

13 person?

14 A. Yes.

15 Q. And where was that?

16 A. Society of Toxicology.

17 Nashville, Tennessee.

18 Q. Okay. So it was a -- it was a

19 medical meeting that you went to where he

20 also happened to be there, correct?

21 A. Correct. It's a meeting with

22 8,000 participants, called the Society of

23 Toxicology. And we were there, and we bumped

24 into each other during posters.

25 Q. So this was a side -- unplanned

Page 116

1 side conversation with Dr. Pearson, correct?

2 A. Correct.

3 Q. Did you -- at that Society of

4 Toxicology meeting, did you attempt to

5 publicize your views on acetaminophen?

6 MR. SNIDOW: Object to the

7 form.

8 THE WITNESS: Can you please

9 explain what you mean by that?

10 QUESTIONS BY MR. MURDICA:

11 Q. Did you -- did you try to go up

12 on stage and tell everyone what

13 Dr. Baccarelli believes?

14 MR. SNIDOW: Objection.

15 Objection to the form.

16 You can answer.

17 THE WITNESS: I don't -- you

18 know, if I tried to go on stage, they

19 will call the police. No. Really,

20 really, I was not an invited speaker

21 in that -- in the presentation. I

22 didn't give presentations.

23 I was an attendant. And so if

24 you -- I do what you suggested, they

25 would probably call public security.

Page 117

1 QUESTIONS BY MR. MURDICA:

2 Q. Okay. Dr. Baccarelli, did you

3 attempt to tell anyone about these new

4 opinions that you had on acetaminophen?

5 MR. SNIDOW: Objection to the

6 form.

7 THE WITNESS: Again, the

8 opinions were not new. They existed

9 before I was retained, and they were

10 pretty solidified before I was

11 retained.

12 And I discussed with -- as I

13 mentioned, there was the conference

14 where I discussed with the colleague

15 at the EPA the problem about the issue

16 that I was researching.

17 QUESTIONS BY MR. MURDICA:

18 Q. To the best you can describe

19 it, Dr. Baccarelli, when was the first time

20 that Dr. Baccarelli decided that the

21 relationship between acetaminophen exposure

22 during pregnancy and autism was causal?

23 MR. SNIDOW: Objection to the

24 form.

25 You can answer, Dr. Baccarelli.

<p style="text-align: right;">Page 118</p> <p>1 THE WITNESS: I wish -- I wish</p> <p>2 I had that comment on me, but to be</p> <p>3 honest, I -- it's very difficult to</p> <p>4 have a record of what my brain thought</p> <p>5 in the past two or three years.</p> <p>6 And I was -- I was particularly</p> <p>7 concerned about acetaminophen starting</p> <p>8 in 2021, 2022, becoming concerned that</p> <p>9 there was a problem. Started to read</p> <p>10 more and more literature, and</p> <p>11 gradually I came to the realization</p> <p>12 that this was a big issue. I believed</p> <p>13 this was real. This was happening.</p> <p>14 This was causal.</p> <p>15 Of course, in order to do -- to</p> <p>16 be reasonably convinced and to say</p> <p>17 under oath that this -- the only</p> <p>18 reasonable explanation for the</p> <p>19 association is there have been seen 30</p> <p>20 more times in the literature, I really</p> <p>21 had to do a Bradford Hill analysis. I</p> <p>22 had to do a documentation of what --</p> <p>23 of what I found.</p> <p>24 And that I did it really in</p> <p>25 April or May. So that is when I</p>	<p style="text-align: right;">Page 120</p> <p>1 that basically says in response to the</p> <p>2 consensus statement, that can't be</p> <p>3 true, offering no evidence.</p> <p>4 And, again, my assessment is</p> <p>5 based on evidence, and it's clear.</p> <p>6 QUESTIONS BY MR. MURDICA:</p> <p>7 Q. Dr. -- are you done?</p> <p>8 A. Yes.</p> <p>9 Q. Dr. Baccarelli, if I understood</p> <p>10 your testimony correctly, your best estimate</p> <p>11 of when Dr. Baccarelli believed the</p> <p>12 relationship between in utero acetaminophen</p> <p>13 exposure and the outcome of autism was causal</p> <p>14 was sometime in 2022.</p> <p>15 Is that fair?</p> <p>16 MR. SNIDOW: Objection to the</p> <p>17 form.</p> <p>18 THE WITNESS: Let me --</p> <p>19 MR. SNIDOW: Just -- only</p> <p>20 reason I'm asking you to pause is so</p> <p>21 that I can get the objection on and</p> <p>22 really get it out entirely.</p> <p>23 Objection to the form.</p> <p>24 You can answer.</p> <p>25 THE WITNESS: Let me give you</p>
<p style="text-align: right;">Page 119</p> <p>1 became ready to file the report and to</p> <p>2 come here to tell you what I found.</p> <p>3 QUESTIONS BY MR. MURDICA:</p> <p>4 Q. Before April or May 2023, did</p> <p>5 Dr. Baccarelli believe that the relationship</p> <p>6 between in utero acetaminophen exposure and</p> <p>7 autism was causal?</p> <p>8 MR. SNIDOW: Objection to the</p> <p>9 form.</p> <p>10 Dr. Baccarelli, you can answer.</p> <p>11 THE WITNESS: I think I already</p> <p>12 said that multiple times. I</p> <p>13 believed -- I had a strong</p> <p>14 understanding that this was a problem</p> <p>15 at least one year before. Maybe</p> <p>16 earlier. And there was</p> <p>17 particularly -- particularly strong</p> <p>18 understanding that this was a huge</p> <p>19 issue.</p> <p>20 I was completely baffled by,</p> <p>21 for instance, reading, at least one</p> <p>22 year before March 2023, the</p> <p>23 statement -- reading again the</p> <p>24 statement by the ACOG, the American</p> <p>25 College of Obstetrics and Gynecology,</p>	<p style="text-align: right;">Page 121</p> <p>1 the entire response again.</p> <p>2 I was educated in medical</p> <p>3 school by OB/GYN doctors that -- and</p> <p>4 pharmacologists that Tylenol is</p> <p>5 perfectly fine and the only drug that</p> <p>6 is safe in pregnant women, for them</p> <p>7 and their children; that other</p> <p>8 painkillers and fever-reducers have</p> <p>9 teratology effects.</p> <p>10 My reaction when we started to</p> <p>11 work on this was, this is a fine idea.</p> <p>12 Let's take a look. If there is a</p> <p>13 question, if there is something going</p> <p>14 on in the literature, we can</p> <p>15 contribute.</p> <p>16 I honestly expected to find</p> <p>17 nothing, and instead we did find</p> <p>18 something. So as a scientist, I'm</p> <p>19 trained to believe in the data, not on</p> <p>20 my own opinions or those of the</p> <p>21 others.</p> <p>22 So gradually, from the time we</p> <p>23 published the Baker 2020 to the time I</p> <p>24 came to -- in 2022, I started to be</p> <p>25 more and more convinced and started to</p>

<p style="text-align: right;">Page 122</p> <p>1 have time to read more literature, 2 started to be more convinced that this 3 was a problem. And it is a problem. 4 QUESTIONS BY MR. MURDICA: 5 Q. Okay. Dr. Baccarelli, the 6 question I just asked you was related to 7 autism. 8 Did you give me your answer 9 with relation to autism? 10 A. Yes, also autism. 11 Q. Okay. 12 A. Absolutely. 13 Q. And so that same answer applies 14 to ADHD; is that correct? 15 A. About the same answer, yeah. 16 Q. Okay. And if you believed -- 17 you reviewed Baker 2020 before your name was 18 on it, correct? Before it was published, you 19 reviewed it? 20 A. Correct. 21 Q. You offered commentary on it 22 and revisions, yes? 23 A. Yes, I did. 24 Q. Okay. And Baker 2020 does not 25 say that the relationship between in utero</p>	<p style="text-align: right;">Page 124</p> <p>1 problem there. 2 And I'm happy to review the 3 paper with you, if you like to. 4 QUESTIONS BY MR. MURDICA: 5 Q. Okay. You just testified that 6 Baker 2020 isn't about autism, and I just 7 want to make sure I understand. 8 Did Baker 2020 cause you to 9 have concern about the relationship between 10 acetaminophen exposure and autism, or did 11 that come later? 12 MR. SNIDOW: Objection to the 13 form. 14 THE WITNESS: So at the same 15 time I was working on this, this 16 triggered an alarm in my mind that all 17 my opinions, based on my own training, 18 that acetaminophen during pregnancy 19 was fine, it was not true. 20 So at the time I started to 21 also to be interested in the 22 literature, I started to review the 23 papers on autism. And over time, as I 24 had time to read and to work on it, I 25 realized that there was a problem with</p>
<p style="text-align: right;">Page 123</p> <p>1 acetaminophen exposure and autism or ADHD is 2 causal, correct? 3 MR. SNIDOW: Objection to the 4 form. 5 You can answer. 6 THE WITNESS: Let me unpack -- 7 let me unpack the situation. 8 Baker 2020 doesn't -- is not on 9 autism. It's on ADHD. So as far as 10 I'm concerned, there is no 11 relationship within the paper and 12 autism. 13 That paper just doesn't deal 14 with autism. It doesn't say that 15 autism is -- that autism is a problem 16 or not. It just doesn't provide any 17 information. And I might be wrong, 18 but I don't think there's any 19 commentary on autism. If there is, 20 please let me know. 21 And I'm pretty sure we had 22 pretty strong language about 23 acetaminophen being associated with 24 autism -- with ADHD, and our -- the 25 results being consistent with having a</p>	<p style="text-align: right;">Page 125</p> <p>1 ADHD and there was a problem with 2 autism. 3 QUESTIONS BY MR. MURDICA: 4 Q. Okay. And ADHD and autism are 5 different neurodevelopmental outcomes from 6 each other, correct? 7 MR. SNIDOW: Objection to the 8 form. 9 THE WITNESS: As you 10 understand, they have the very similar 11 genetic background, and they're 12 interrelated. They're a comorbidity. 13 So they're interrelated -- 14 interrelated diseases that get 15 diagnosed in two different DSM-5 16 categories. But they clearly have 17 similar origins, including genetics, 18 and they're clearly similar also, 19 etiology and causes. 20 QUESTIONS BY MR. MURDICA: 21 Q. They have different 22 symptomology and different presentations, 23 correct, between ADHD and autism? 24 A. Absolutely. For instance, let 25 me give you an example here.</p>

<p style="text-align: right;">Page 126</p> <p>1 Smoking causes lung cancer and</p> <p>2 causes cardiovascular disease. So would you</p> <p>3 say because cardiovascular disease and smoke</p> <p>4 and cancer are different, they have different</p> <p>5 symptoms? It can't be possible that smoking</p> <p>6 causes both?</p> <p>7 Q. Doctor, I'm not -- I'm not</p> <p>8 asking you about smoking, and I'm not asking</p> <p>9 you about causation in that question to one</p> <p>10 or the other. I was asking you about the</p> <p>11 symptomology of autism and ADHD. Okay?</p> <p>12 So I appreciate that you're</p> <p>13 trying to draw a comparison, but it wasn't</p> <p>14 what I was -- it wasn't what I was asking</p> <p>15 about.</p> <p>16 MR. SNIDOW: Okay. Objection</p> <p>17 to form.</p> <p>18 You got a question, Jim?</p> <p>19 THE WITNESS: Sorry?</p> <p>20 MR. SNIDOW: I just -- I don't</p> <p>21 think we have a question pending.</p> <p>22 THE WITNESS: You don't</p> <p>23 think --</p> <p>24 MR. SNIDOW: I'm talking to</p> <p>25 him.</p>	<p style="text-align: right;">Page 128</p> <p>1 No, there is a lot of</p> <p>2 statements that are consistent with causality</p> <p>3 in that paper. I'm happy to review them with</p> <p>4 you. There is quite a bit of language that</p> <p>5 is very strong.</p> <p>6 Q. Did you believe at the time of</p> <p>7 publication of Baker 2020 that the</p> <p>8 relationship between in utero acetaminophen</p> <p>9 exposure and ADHD was causal, Doctor?</p> <p>10 MR. SNIDOW: Objection to the</p> <p>11 form.</p> <p>12 You may answer.</p> <p>13 THE WITNESS: I think you are</p> <p>14 conflating two different things. One</p> <p>15 is one single paper and whether that</p> <p>16 paper is consistent with causality,</p> <p>17 which we said very clearly in that</p> <p>18 paper. We really said these are data</p> <p>19 that are concerning. There is an open</p> <p>20 question about whether it's causal or</p> <p>21 not.</p> <p>22 Our paper shows that the</p> <p>23 opinion of the evidence -- strength in</p> <p>24 the evidence that there is a causal</p> <p>25 association between ADHD and prenatal</p>
<p style="text-align: right;">Page 127</p> <p>1 THE WITNESS: Okay. Sorry.</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. He's breaking the rules again,</p> <p>4 and so now he has himself confused. And now</p> <p>5 he has you confused.</p> <p>6 A. No, I'm not confused. Don't</p> <p>7 worry, I'm not confused.</p> <p>8 Q. It's okay, Doctor.</p> <p>9 Doctor, at the time that Baker</p> <p>10 2022 was signed off on by Dr. Baccarelli,</p> <p>11 there was no statement in the publication</p> <p>12 that said that you believed or your group</p> <p>13 believes the relationship between</p> <p>14 acetaminophen in utero exposure and ADHD was</p> <p>15 causal, correct?</p> <p>16 MR. SNIDOW: Objection to the</p> <p>17 form.</p> <p>18 THE WITNESS: I think you're</p> <p>19 making my own mistake. You're saying</p> <p>20 Baker '22?</p> <p>21 QUESTIONS BY MR. MURDICA:</p> <p>22 Q. Baker 2020.</p> <p>23 A. Yes, I feel better now, that</p> <p>24 actually I'm not the only one doing that.</p> <p>25 Really.</p>	<p style="text-align: right;">Page 129</p> <p>1 acetaminophen.</p> <p>2 If you're asking me about my</p> <p>3 opinion that all the literature as a</p> <p>4 whole describes and shows clearly a</p> <p>5 causal association, that requires not</p> <p>6 one paper but entire literature.</p> <p>7 QUESTIONS BY MR. MURDICA:</p> <p>8 Q. No individual paper, at least</p> <p>9 in what you've seen so far, establishes</p> <p>10 causation for in utero exposure of</p> <p>11 acetaminophen with the outcomes of autism and</p> <p>12 ADHD, correct?</p> <p>13 MR. SNIDOW: Objection to the</p> <p>14 form.</p> <p>15 THE WITNESS: I didn't say</p> <p>16 that. I actually said the opposite.</p> <p>17 QUESTIONS BY MR. MURDICA:</p> <p>18 Q. Okay. Can you point to any</p> <p>19 individual paper that you reviewed that comes</p> <p>20 to the conclusion that the relationship</p> <p>21 between acetaminophen and one of those</p> <p>22 neurodevelopmental outcomes is causal?</p> <p>23 A. There are many that have those</p> <p>24 statements. For instance, I wrote in my</p> <p>25 executive summary that is on page 7, I said</p>

Page 130

1 there are many other researchers who
 2 acknowledge the -- sorry.
 3 The authors of Olsen and Liew
 4 say that their work increased the probability
 5 that the association is causal.
 6 Gou, I think this is 2019, says
 7 that their findings lend weight to the
 8 hypothesis that the association is causal.
 9 The author of the Ystrom study
 10 say that their results are consistent with a
 11 causal link.
 12 Stergiakouli says that their
 13 findings were consistent with an intrauterine
 14 effect, which is causation.
 15 Alemany even did a Bradford
 16 Hill analysis. So they even had a full
 17 Bradford Hill analysis that, as you know, is
 18 done to establish causation, and they
 19 concluded that association is causal.
 20 And even there is a textbook,
 21 which is the Briggs Drugs in Pregnancy and
 22 Lactation, that is a reference guide to fetal
 23 and neonatal risk that goes as far to provide
 24 pregnancy recommendations. And they say
 25 that acetaminophen is a problem.

Page 131

1 Q. So --
 2 A. So I think your answer is all
 3 of this -- there are many papers that
 4 contribute to the evidence that this
 5 association is causal.
 6 Q. Let the record reflect that the
 7 doctor was just reading off of something he
 8 put in front of himself, which is his report,
 9 that he's reading into the record.
 10 A. Page 7.
 11 MR. SNIDOW: Objection to the
 12 form.
 13 QUESTIONS BY MR. MURDICA:
 14 Q. Did I ask you to read anything
 15 to me, Doctor?
 16 MR. SNIDOW: Objection to the
 17 form.
 18 THE WITNESS: I understand that
 19 this is part of the proceedings and
 20 that I'm allowed to read it. So if
 21 you have any objections to this, let
 22 me know.
 23 QUESTIONS BY MR. MURDICA:
 24 Q. Doctor, do you remember what my
 25 question was?

Page 132

1 A. No, but if you want to --
 2 Q. Okay.
 3 A. -- tell me again.
 4 Q. Is it your testimony that each
 5 of the studies you just referenced by reading
 6 out of your report, it's your testimony that
 7 each of those separately concludes causation
 8 between acetaminophen exposure and the
 9 outcome of ADHD?
 10 MR. SNIDOW: Objection to the
 11 form.
 12 You can answer.
 13 THE WITNESS: Again, your
 14 question implies that one single study
 15 is enough.
 16 If one single study were
 17 enough, we wouldn't be here today. We
 18 need the entirety of the study and
 19 entirety of the evidence. This is how
 20 epidemiology work.
 21 I understand you are not an
 22 epidemiologist, but I also need to say
 23 that when we do -- this was
 24 well-delineated by Bradford Hill
 25 himself. This year, 1965, Bradford

Page 133

1 Hill says you need to read the
 2 entire -- entirety of the literature
 3 and do an analysis of all the
 4 literature.
 5 So what you're asking me is not
 6 consistent with the study of
 7 epidemiology that has been established
 8 for more than 50 years.
 9 QUESTIONS BY MR. MURDICA:
 10 Q. Now we're understanding each
 11 other, Doctor, because my question is, no
 12 single study standing alone can establish
 13 causation, correct?
 14 MR. SNIDOW: Objection to the
 15 form.
 16 THE WITNESS: But many single
 17 studies, about 30, are consistent with
 18 causation.
 19 QUESTIONS BY MR. MURDICA:
 20 Q. Okay. So you agreed with my
 21 statement, correct?
 22 MR. SNIDOW: Objection to the
 23 form.
 24 THE WITNESS: I don't agree
 25 with your statement.

Page 134

1 QUESTIONS BY MR. MURDICA:
 2 Q. Okay. So a single study
 3 standing alone can establish causation,
 4 according to Dr. Baccarelli, correct?
 5 MR. SNIDOW: Objection to the
 6 form.
 7 Dr. Baccarelli, you can answer.
 8 THE WITNESS: I didn't say
 9 that.
 10 I said single studies can
 11 contribute to causation, and I said
 12 that your question wouldn't be allowed
 13 in any class of epidemiology. If a
 14 student asked your question, I would
 15 be worried about whether they've been
 16 listening to any epidemiology
 17 questions.
 18 QUESTIONS BY MR. MURDICA:
 19 Q. Okay. So is your answer that
 20 you can't answer my question, Dr. Baccarelli?
 21 A. My answer --
 22 MR. SNIDOW: Hold on. Hold on.
 23 Objection to the form.
 24 Take a deep. You can answer.
 25 MR. MURDICA: No other

Page 135

1 commentary. That's enough. You're
 2 interfering with my examination.
 3 MR. SNIDOW: I don't think I
 4 was, but I'll -- object to the form.
 5 You can answer.
 6 I think we've agreed --
 7 MR. MURDICA: He knows he
 8 can -- you don't need to tell him he
 9 can answer. Just say "object to form"
 10 if you have a form objection.
 11 Okay?
 12 MR. SNIDOW: I've said that one
 13 many times. I didn't know you had a
 14 problem with it, but if you want --
 15 MR. MURDICA: Well, you're
 16 interfering.
 17 MR. SNIDOW: If you want, I'll
 18 say "object to form."
 19 THE WITNESS: My answer is that
 20 if you were a student in an
 21 epidemiology class or any course that
 22 you asked the questions, would
 23 probably take a C or a D or a bad
 24 grade because this is not the way
 25 epidemiology works.

Page 136

1 QUESTIONS BY MR. MURDICA:
 2 Q. Yeah.
 3 So let's try to get an answer
 4 under oath on the record then.
 5 According to Dr. Baccarelli,
 6 can causation be established from a single
 7 study?
 8 MR. SNIDOW: Objection to the
 9 form.
 10 THE WITNESS: It depends on the
 11 study.
 12 QUESTIONS BY MR. MURDICA:
 13 Q. Did you see any in your review
 14 of the literature here that, standing alone,
 15 establishes a causal relationship between
 16 acetaminophen and the neurodevelopmental
 17 outcomes that are adverse?
 18 A. Again, I saw many. The
 19 overwhelming majority, 90 percent of the
 20 studies here, 95 percent of the study, are
 21 consistent and strongly supportive of
 22 causation. And overall, the evidence is
 23 incredibly clear.
 24 It's -- you don't even need to
 25 read my report. You can look at the tables

Page 137

1 that show the studies, and you will see that
 2 all the studies together show causation.
 3 Q. Okay. Dr. Baccarelli, you're
 4 not answering my question.
 5 Is it a principle of
 6 epidemiology, according to Dr. Baccarelli,
 7 that a single study can establish causation
 8 in and of itself for any exposure and effect?
 9 MR. SNIDOW: Objection to the
 10 form.
 11 THE WITNESS: It is -- it is a
 12 principle of epidemiology that a study
 13 can be consistent with causation and
 14 that you need more than one study to
 15 have a complete Bradford Hill
 16 analysis.
 17 And we have them here. We have
 18 here many studies that are consistent
 19 with causation, so it's incredibly
 20 clear that it is more likely than not
 21 that acetaminophen causes all the
 22 outcomes that I mentioned in my
 23 report.
 24 QUESTIONS BY MR. MURDICA:
 25 Q. I know you believe that,

Page 138

1 Dr. Baccarelli, and thank you for continuing
 2 to repeat it. It's very helpful.
 3 MR. SNIDOW: Objection --
 4 objection -- objection to the form.
 5 QUESTIONS BY MR. MURDICA:
 6 Q. And, Dr. Baccarelli, you're
 7 going to repeat it -- you're going to attempt
 8 to -- you promised me that you're going to
 9 attempt to submit this into a medical
 10 journal, correct?
 11 A. Yes, I will.
 12 Q. Okay. And when you do that,
 13 what are you going to disclose as your
 14 conflict?
 15 A. I'm going to disclose that I
 16 worked in this litigation, and that's a
 17 potential conflict of interest, of course.
 18 Why wouldn't I?
 19 Q. Okay. Have you ever seen a
 20 publication where an author disclosed that
 21 they received over \$100,000 from the
 22 plaintiff -- from the United States
 23 plaintiffs' Bar to do the work?
 24 MR. SNIDOW: Objection.
 25

Page 139

1 QUESTIONS BY MR. MURDICA:
 2 Q. Have you ever seen that?
 3 MR. SNIDOW: Objection to the
 4 form.
 5 THE WITNESS: I can -- I'm
 6 happy to write one, if it has never
 7 been done before.
 8 QUESTIONS BY MR. MURDICA:
 9 Q. Okay.
 10 A. I have no problem with that. I
 11 mean, honestly. Why would I be ashamed or
 12 worried. I mean, I --
 13 Q. Well, I can give you a lot of
 14 reasons, Doctor.
 15 MR. SNIDOW: Objection.
 16 And, Jim, Jim, Jim, look at me.
 17 Look at me. I'm going to behave, but
 18 you've got to stop that, too. You
 19 know that. You know what this record
 20 looks like right now.
 21 MR. MURDICA: He asked me.
 22 MR. SNIDOW: No.
 23 QUESTIONS BY MR. MURDICA:
 24 Q. Dr. Baccarelli, do you know if
 25 your colleagues -- well, first of all, you

Page 140

1 agree that if somebody is taking money from
 2 one side of a litigation, that that is a
 3 conflict if it relates to a work they're
 4 trying to publish, right?
 5 MR. SNIDOW: Objection to the
 6 form.
 7 THE WITNESS: That is not true.
 8 It is a potential conflict, and this
 9 is why we disclose potential conflict.
 10 We are not required to disclose
 11 conflicts. We are required to
 12 disclose potential conflict.
 13 So this is an important
 14 distinction that you're conflating.
 15 QUESTIONS BY MR. MURDICA:
 16 Q. Okay. But you would agree,
 17 Dr. Baccarelli, that it is a potential
 18 conflict if a study author has received money
 19 from a litigant in a way that relates to the
 20 subject matter of their -- of their
 21 publication, correct?
 22 A. And, again, it's a potential
 23 conflict and, therefore, it's disclosed.
 24 Once it's disclosed, people have their own
 25 brains.

Page 141

1 Q. Right.
 2 A. They can dis -- they can dis --
 3 they can evaluate the merit. Used to
 4 evaluate the merit and the data and the
 5 evidence, if they have any disagreement with
 6 the way I present the evidence, they will --
 7 they will disagree. And they would probably
 8 be more critical because I worked with the --
 9 with the lawyers.
 10 So, I mean, that -- I'm ready
 11 to get the fire. This is very solid.
 12 And by the way, I'm planning to
 13 publish all the tables that transparently
 14 show how I've evaluated every paper.
 15 So the reason why I'm very
 16 confident is that I'm not going to say
 17 Tylenol sucks or acetaminophen sucks,
 18 correct? I'm going to say, here is the
 19 evidence. It is classified meticulously and
 20 with rigor. I'm going to present these
 21 tables.
 22 And the tables talk by
 23 themselves. I mean, you don't even need my
 24 opinion. You need -- just need the tables.
 25 And the tables are in the literature.

Page 142

1 Everyone can redo exactly what I did.
 2 Q. Right.
 3 And as it sits today, you know
 4 that the medical organizations disagree with
 5 you, correct?
 6 MR. SNIDOW: Objection to the
 7 form.
 8 THE WITNESS: Which medical
 9 organizations in particular?
 10 QUESTIONS BY MR. MURDICA:
 11 Q. Well, you know ACOG disagrees
 12 with you, right?
 13 MR. SNIDOW: Objection to the
 14 form.
 15 THE WITNESS: ACOG has written
 16 a statement three years ago. I don't
 17 know whether they disagree with me
 18 now.
 19 And I think the reason why we
 20 are here is exactly because they --
 21 the medical organizations haven't
 22 taken a position yet. I hope they
 23 take it soon because they have a
 24 problem in their hands.
 25

Page 143

1 QUESTIONS BY MR. MURDICA:
 2 Q. You think that's what you're
 3 doing with this litigation? That's why
 4 you're here?
 5 A. No. The reason why I'm here is
 6 because I'm asked. The reason why I'm here,
 7 because I can provide evidence. The reason
 8 why I'm here is because it's a way to bring
 9 the evidence to the floor.
 10 I'm a scientist. I'm
 11 interested in the evidence. I'm not
 12 interested in interfering with everyone's --
 13 everyone's business.
 14 Q. Right.
 15 And you're also employed,
 16 correct, Dr. Baccarelli?
 17 A. Say that again?
 18 Q. You're also employed in this
 19 litigation. You're not doing it for free,
 20 correct?
 21 A. I'm employed, and I'm under
 22 oath. I understand the repercussions of, A,
 23 saying something that is under oath; and B,
 24 particularly, not doing enough due diligence
 25 to -- because, I mean, I can have my opinions

Page 144

1 and be wrong, but this is not my opinions.
 2 This is the evidence.
 3 Q. But you're not doing this out
 4 of the goodness of your heart. You could,
 5 but you chose to accept money for it,
 6 correct?
 7 MR. SNIDOW: Objection to the
 8 form.
 9 THE WITNESS: I -- and I really
 10 appreciate that my time is valued. I
 11 do.
 12 QUESTIONS BY MR. MURDICA:
 13 Q. Okay. Back to Exhibit 89.
 14 A. 89, yeah.
 15 Q. Okay. At the time -- so,
 16 Dr. Baccarelli, how are we going to figure
 17 out when you were first hired in this
 18 litigation? Do you have an e-mail or a
 19 telephone log? What -- how were you first
 20 contacted? Was it by phone? By e-mail?
 21 A. By e-mail.
 22 Q. Okay. So you would be able to
 23 tell the first date that you were first
 24 contacted from your e-mail, correct?
 25 A. I guess probably the best way

Page 145

1 is to see when I started to work on it. And
 2 I understand that you have the logs of my
 3 time, correct?
 4 Q. Actually, they weren't
 5 produced. So I'll just put on the record
 6 that if counsel wants to tell me before the
 7 end of this deposition when they first
 8 contacted Dr. Baccarelli, that would be
 9 appreciated.
 10 I think there was an objection
 11 to producing his bills, so we don't have
 12 anything on that, which is why I'm asking all
 13 these questions.
 14 A. Okay. Thank you.
 15 Q. Okay. So, Dr. Baccarelli, you
 16 referred this investment advisor representing
 17 an institutional investor who is interested
 18 in Tylenol to, among -- Dr. Liew is one of
 19 the people you referred them to, right?
 20 A. Yep.
 21 Q. You also referred them to
 22 Dr. Pearson, who you say at the time you
 23 didn't know was working for the plaintiffs'
 24 lawyers on this, right?
 25 A. So, first of all, I didn't

Page 146

1 refer them. I suggested names of people that
 2 might have information, and if they wanted to
 3 have an alternative opinion, they could. And
 4 these are the people who published on the
 5 paper, on the subject. So I give them these
 6 name because of the people who published on
 7 the subjects.
 8 Q. Well, they also told you that
 9 they would pay you if the referral -- if the
 10 people that you're recommending them to takes
 11 their call, right?
 12 A. That is not true. I never
 13 received any money.
 14 Q. Oh, they didn't tell you that
 15 in the next page?
 16 A. If they said, they didn't
 17 probably contact, because I did not receive
 18 any money.
 19 Is it there?
 20 Q. It's there.
 21 A. I didn't get any money. I'm
 22 sorry.
 23 Q. Okay.
 24 A. I didn't even notice they were
 25 willing me to pay -- to pay me.

Page 147

1 Q. When you gave these names, they
 2 were referrals, and they told you you would
 3 be paid even if you weren't, right?
 4 A. I didn't notice that was the
 5 case --
 6 Q. Okay.
 7 A. -- and I never got paid, and I
 8 didn't do it because I wanted to be paid.
 9 Q. Another person --
 10 A. It's pretty typical, because
 11 usually when people tell me I get money to
 12 refer them to a shop or the -- to a barber, I
 13 like to get the money. But in this case, I
 14 didn't even notice that.
 15 Q. One of the other people you
 16 referred them to is Ann Bauer, right?
 17 A. Again, this is not -- I don't
 18 know Dr. Bauer. I know that she published a
 19 few papers that were in the literature.
 20 Q. And do you -- do you know if
 21 she was in the majority or minority as it
 22 relates to acetaminophen and
 23 neurodevelopmental outcomes?
 24 A. I -- I --
 25 MR. SNIDOW: Object --

Page 148

1 object -- object to form.
 2 THE WITNESS: I think you see
 3 here that these people are people
 4 who -- in the conversation with the --
 5 with them, I realize they wanted to
 6 hear whether this is a concern. So it
 7 gave me -- I gave them a list of
 8 people that would probably speak to
 9 the concern, and that they're experts
 10 and they're people who publish the
 11 associations.
 12 Most of them, I believe, they
 13 published associations on Tylenol and
 14 neurodevelopmental disorders that were
 15 positive. So I just assumed that they
 16 would love to hear from the people who
 17 found the problems.
 18 Because as you know, often the
 19 people who find the problems are
 20 closest to the problems, and they
 21 might be right.
 22 QUESTIONS BY MR. MURDICA:
 23 Q. So did you know Dr. Bauer
 24 before 2003?
 25 A. I never met her.

Page 149

1 Q. Okay. So you don't know -- do
 2 you know if Dr. Bauer is somebody you
 3 consider an expert or not?
 4 A. You know, I -- Dr. Bauer was
 5 the first author of our consensus statement
 6 that was published in 2019, and probably I
 7 remember the consensus statement with -- this
 8 is why -- this is why I referred her, too. I
 9 know that she published quite a bit in the
 10 literature, and I was aware of that.
 11 Q. Do you know she was -- were you
 12 aware if she was retained by the plaintiffs'
 13 lawyers at the time?
 14 MR. SNIDOW: Objection to the
 15 form.
 16 THE WITNESS: I -- I'm not
 17 aware even now.
 18 QUESTIONS BY MR. MURDICA:
 19 Q. Okay.
 20 A. I don't think -- I'm not sure
 21 whether she was retained. I didn't know at
 22 the time. I don't know now.
 23 Q. How about Kriebel?
 24 A. I know David Kriebel because he
 25 taught me epidemiologies 20 years ago.

<p style="text-align: right;">Page 150</p> <p>1 By the way, he speaks wonderful 2 Italian, and he's a great teacher. And he 3 taught me epidemiology in Italian 25 years 4 ago. I haven't talked with him in 20 years, 5 I think. 6 Q. Do you know if he was retained 7 by the plaintiffs here? 8 A. No, I don't know. 9 Q. Okay. Same question for Shanna 10 Swan. Do you know if she was retained by the 11 plaintiffs here? 12 A. I don't know. 13 Q. Okay. And this is on 14 January 18th that you send this e-mail, 15 right? 16 A. Correct. 17 Q. Okay. And sitting here today, 18 right now, you don't know still if you were 19 retained by the plaintiffs, or contacted by 20 the plaintiffs, by January 18th of 2023, 21 correct? 22 A. I believe this was before I 23 started to work, but I'm not 100 percent 24 sure. 25 Q. Okay. Is there a difference</p>	<p style="text-align: right;">Page 152</p> <p>1 A. Yeah, the techniques -- the 2 techniques used to measure meconium -- to 3 measure chemicals in meconium. 4 Q. So is it correct that the Laue 5 2018 or 2019 meconium study was the first 6 study you've ever done with meconium? 7 A. Sorry, can you say that again? 8 Q. Sure. 9 Is it correct that the Laue 10 2018 or 2019 meconium study was the first 11 study you've ever done with meconium, 12 Dr. Baccarelli? 13 A. Yeah, I think this was the 14 first study ever done with meconium. We read 15 the literature about meconium, and one of our 16 colleagues who is the analyst here, who is 17 the biochemist, J.P. Bellenger, proposed to 18 use meconium in this cohort because he made 19 me aware of plenty of literature showing that 20 meconium reflects exposure to chemicals to 21 which the mothers are exposed during several 22 months of pregnancy. At least five months of 23 pregnancy. The five months before delivery. 24 Q. And have you seen any 25 literature that quantifies how much meconium</p>
<p style="text-align: right;">Page 151</p> <p>1 between when you started to work on it and 2 when you were first contacted? 3 A. I'm not sure. I know -- I 4 don't know the dates, really. 5 Q. Okay. Baker 2020 was a study 6 of meconium, the GESTE, G-E-S-T-E, cohort, 7 right? 8 A. Sorry, G -- GESTE? 9 Q. GESTE. 10 A. GESTE. 11 Q. Right? 12 A. Baker 2020 was a study 13 reporting results from the GESTE cohort, 14 meconium, acetaminophen. 15 Q. And was that the second 16 meconium study that you were ever involved 17 in, Dr. Baccarelli? 18 A. It was the second on 19 acetaminophen, I believe, in meconium. 20 Q. What other meconium studies 21 have you been involved in? 22 A. We published a paper in 2019 23 reporting on some of the techniques we used. 24 Q. The techniques used in -- by 25 Dr. Laue and yourself in that article?</p>	<p style="text-align: right;">Page 153</p> <p>1 is made throughout those five months of 2 pregnancy? 3 A. There are studies on 4 miscarriages and on abortions that have 5 measured the level of meconium in each of 6 the -- in each of the -- of the -- each of 7 the weeks of pregnancies. 8 And also, there is a huge 9 amount of literature on chemicals in meconium 10 that makes people -- that creates -- this is 11 a fact. It's really a fact that meconium -- 12 it's completely accepted in the literature 13 that meconium reflects exposure over five 14 months or even six months before pregnancy. 15 The reason is because meconium 16 gets to be accumulated six months before 17 delivery. The gut of the baby becomes to 18 develop, and at that point meconium start to 19 be produced. And meconium accumulates slowly 20 over time. It accumulates slowly over time 21 until the end of the -- of the pregnancy. 22 Q. And have you seen studies to 23 that effect, that show how much meconium 24 accumulates at -- over that course of time? 25 Have you seen those?</p>

Page 154

1 A. I understand there are studies
2 like this. I haven't reviewed them directly.
3 Q. You understand there are
4 from -- from what?
5 A. Again, from miscarriages and --
6 studies on miscarriages, studies of aborted
7 fetuses. People know how big is the bowel of
8 the -- of the -- of the baby over time.
9 Q. Can you cite one study that
10 says that right now?
11 A. I relied on them. There are --
12 there are a lot of -- there's a lot of
13 literature -- if you want, I can produce --
14 about the use of meconium as a biomarker of
15 chemical exposure. This has been -- it's
16 incredibly well-accepted in the literature.
17 It's not something we made up. It's not
18 something -- it's something that we relied --
19 there are at least 20 years of toxicology
20 studies reporting on meconium.
21 Q. Have you seen literature, or
22 can you point me to any, that quantifies the
23 maternal exposure at a given point in time in
24 the pregnancy and how -- the level at which
25 it appears in the meconium, given that time

Page 155

1 exposure in pregnancy?
2 A. So there are many studies that
3 measured or assessed the exposure of the
4 mothers and looked at the correlation with
5 the same level of the same chemical in
6 meconium. And they show a very strong
7 correlation, and they're very -- this makes
8 everyone -- made everyone believe that
9 meconium is a great way to measure maternal
10 exposure to chemicals.
11 Q. Okay. Is a maternal exposure
12 in the sixth month of pregnancy reflected
13 equally in the meconium as the same maternal
14 exposure in the eighth month of pregnancy?
15 A. So we -- the production of
16 meconium is believed to increase -- to be
17 larger in the -- in the last few months of
18 pregnancy. So we believe that there is more
19 exposure reflected in meconium in the last
20 trimester compared to the second trimester.
21 Q. Okay. So would a -- would a
22 drug exposure in the last month of pregnancy
23 show up in a greater presence in the meconium
24 than the same drug exposure two months
25 earlier?

Page 156

1 A. It depends on the quantity of
2 exposure, of course.
3 Q. Have you done that type of
4 study with respect to acetaminophen in
5 meconium?
6 A. It has been done plenty of
7 times in different -- in different studies of
8 other chemicals, so we know this happens in
9 meconium. Also, meconium is a gel that traps
10 chemicals.
11 So perhaps you are implying --
12 I don't want to say you're doing -- that if
13 someone takes a pill of meconium two days
14 before pregnancy, that would completely sway
15 the results.
16 That doesn't happen, because
17 meconium -- in order for a drug to end up in
18 meconium, it needs to work through the mom.
19 It needs to go into the amniotic fluid. The
20 baby swallows it. The fetus swallows it.
21 Sorry. It goes into the -- into the guts,
22 and it gets there through the bile.
23 So -- and when it's there, it's
24 trapped. So it really almost -- I don't know
25 whether you can relate to the old geological

Page 157

1 archives. We can tell today that there was
2 climate change 2 million years ago because we
3 can go through the rocks and identify --
4 identify levels of exposure 2 million years
5 ago.
6 This is what happens in
7 meconium. It gets all jumbled up, so we
8 cannot really do the -- the strata. But
9 really what happens there is that each
10 contribution gets trapped and represented for
11 the entire five months. It gives us a nice
12 average of five months of exposure. A little
13 more weighted toward the end, but it's a nice
14 average of five months of exposure.
15 Q. Okay. So Dr. Baccarelli's
16 testimony is that the exposure during
17 pregnancy in the meconium represents an
18 average and is slightly weighted to exposures
19 at the end of the pregnancy, correct?
20 A. There is a little more
21 representation of exposures at the end of the
22 pregnancy.
23 Q. Okay.
24 A. I think that is correct.
25 Q. And I take it based on your

<p style="text-align: right;">Page 158</p> <p>1 answer that according to Dr. Baccarelli,</p> <p>2 acetaminophen administered during labor or</p> <p>3 delivery would not be represented in the</p> <p>4 child's meconium, correct?</p> <p>5 MR. SNIDOW: Objection to the</p> <p>6 form.</p> <p>7 THE WITNESS: No, that is not</p> <p>8 right.</p> <p>9 QUESTIONS BY MR. MURDICA:</p> <p>10 Q. Oh, okay.</p> <p>11 A. That is not right.</p> <p>12 Q. So according to Dr. Baccarelli,</p> <p>13 acetaminophen that the mother utilized during</p> <p>14 labor and delivery would be -- would be</p> <p>15 reflected in the child's meconium?</p> <p>16 A. Absolutely. That was a concern</p> <p>17 we had. In fact, in Baker 2020, we took that</p> <p>18 into account. We did the results with</p> <p>19 everyone included, and then we looked at the</p> <p>20 medical records, the medical charts, and we</p> <p>21 excluded those women who had delivered --</p> <p>22 sorry, who had received acetaminophen during</p> <p>23 labor and delivery. And when we excluded</p> <p>24 those women, the results were exactly the</p> <p>25 same.</p>	<p style="text-align: right;">Page 160</p> <p>1 form.</p> <p>2 THE WITNESS: Sorry, can you</p> <p>3 say that again?</p> <p>4 QUESTIONS BY MR. MURDICA:</p> <p>5 Q. Sure.</p> <p>6 Separate and apart from the</p> <p>7 outcomes of autism and ADHD --</p> <p>8 A. Uh-huh.</p> <p>9 Q. -- have you seen a study, or</p> <p>10 any study, correlating acetaminophen exposure</p> <p>11 during pregnancy at different times with the</p> <p>12 quantity of acetaminophen in meconium?</p> <p>13 MR. SNIDOW: Objection to the</p> <p>14 form.</p> <p>15 THE WITNESS: So we know that</p> <p>16 that happens. If we find</p> <p>17 acetaminophen in meconium, it's</p> <p>18 because -- it's because it gets there</p> <p>19 unless you are having -- gets there in</p> <p>20 other ways. But especially at</p> <p>21 deliveries we found.</p> <p>22 By the way, in our study we</p> <p>23 got, I think, 55 percent of women who</p> <p>24 tested positive -- or, sorry, meconium</p> <p>25 that tested positive for</p>
<p style="text-align: right;">Page 159</p> <p>1 So, clearly, if you are arguing</p> <p>2 that our results are biased by having -- by</p> <p>3 the women who took acetaminophen during their</p> <p>4 labor and delivery, they're not. We excluded</p> <p>5 those women. The results stood on their own,</p> <p>6 only with the -- with the -- with the women</p> <p>7 who took acetaminophen before.</p> <p>8 Q. And then the reason,</p> <p>9 Dr. Baccarelli, that you looked at the</p> <p>10 results excluding the women who took it</p> <p>11 during labor and delivery is because you were</p> <p>12 worried that that peripartum administration</p> <p>13 of acetaminophen would skew the results,</p> <p>14 correct?</p> <p>15 A. No. We wanted -- I was not</p> <p>16 worried. We wanted to double-check that.</p> <p>17 And that -- we have data to say -- yeah,</p> <p>18 you're right. I was worried. I'm not</p> <p>19 worried anymore.</p> <p>20 Q. Okay. Have you conducted, or</p> <p>21 have you seen any studies conducted, that</p> <p>22 measure -- that correlate acetaminophen</p> <p>23 exposure during pregnancy to the level of</p> <p>24 acetaminophen in meconium?</p> <p>25 MR. SNIDOW: Objection to the</p>	<p style="text-align: right;">Page 161</p> <p>1 acetaminophen. That is about the same</p> <p>2 proportion of women who use</p> <p>3 acetaminophen during pregnancy. So</p> <p>4 I'm pretty convinced that we are</p> <p>5 picking up meconium -- sorry,</p> <p>6 acetaminophen during pregnancy.</p> <p>7 Also, from -- the reason why</p> <p>8 this study is important is because it</p> <p>9 asks the question, is acetaminophen in</p> <p>10 the child the cause of -- contributes</p> <p>11 to answering this question, is</p> <p>12 acetaminophen in the child the cause</p> <p>13 of ADHD in this case?</p> <p>14 You can understand that, okay,</p> <p>15 women take the Tylenol, might -- has</p> <p>16 to get to the baby. It needs to</p> <p>17 get -- so the fact that we're</p> <p>18 measuring the dose in the baby, it</p> <p>19 gives even more information that in a</p> <p>20 way is mechanistic; that is, the</p> <p>21 meconium that is in the baby that is</p> <p>22 associated and potentially causes</p> <p>23 ADHD.</p> <p>24 So I understand that you want</p> <p>25 to know how many pills women are</p>

Page 162

1 taking, but in this case the study is
 2 important because we are measuring
 3 acetaminophen in the baby. Because
 4 it's acetaminophen in the baby that
 5 causes the -- that causes the disease.
 6 QUESTIONS BY MR. MURDICA:
 7 Q. Yeah, Dr. Baccarelli, I don't
 8 think you're understanding my question, so
 9 let me ask it not about acetaminophen.
 10 A. Uh-huh.
 11 Q. Have you seen meconium studies
 12 that show an administration of a particular
 13 agent to the mother at -- different mothers
 14 at different times during pregnancy and
 15 looking at the results of the concentration
 16 in the meconium to see whether all
 17 administration at different times of the
 18 pregnancy ends up being the same in the
 19 meconium?
 20 A. So there are many studies in
 21 the past 20 years that have been done,
 22 particularly about illicit drugs, and this is
 23 why it is being used. This test has been
 24 first brought about by -- with the interest
 25 of understanding whether women use illicit

Page 163

1 drugs. And you can find cocaine in meconium.
 2 You can find marijuana. You can find
 3 alcohol. You can find products of tobacco.
 4 And all the literature we have
 5 today is consistent with the proposition that
 6 this is a great biomarker of chemical
 7 exposures.
 8 Q. Okay. You believe you answered
 9 my question?
 10 MR. SNIDOW: Objection to the
 11 form.
 12 THE WITNESS: I do.
 13 QUESTIONS BY MR. MURDICA:
 14 Q. Okay. Have you seen
 15 meconium -- I'm going to ask it one more
 16 time, and if you can't improve on your
 17 answer, just tell me you can't improve on
 18 your answer. Okay?
 19 Have you seen meconium studies
 20 that show an administration of a particular
 21 agent to the mother at different times during
 22 pregnancy that look at the results of the
 23 concentration in the meconium to see whether
 24 all administration at different times of the
 25 pregnancy ends up being the same in the

Page 164

1 meconium?
 2 A. So I --
 3 MR. SNIDOW: Hold on.
 4 Objection to the form.
 5 THE WITNESS: I'm happy to
 6 review any other study -- any study
 7 you might have in that respect.
 8 I'm pretty familiar with the
 9 concept that meconium is a biomarker
 10 of exposure during pregnancy, that
 11 chemicals get trapped in meconium.
 12 We might even have published an
 13 abstract at some point looking at our
 14 own data. So that -- where we looked
 15 at -- in abstract where we looked at
 16 some of the data we had with
 17 acetaminophen during pregnancy and
 18 delivery.
 19 QUESTIONS BY MR. MURDICA:
 20 Q. Okay.
 21 A. And we found pretty consistent
 22 results, as far as I was concerned, with --
 23 with our own abstract.
 24 Q. Consistent how?
 25 A. That our data were consistent

Page 165

1 with the -- with the tenet that
 2 acetaminophen -- that acetaminophen in
 3 meconium reflects exposure both at the time
 4 of delivery and during pregnancy.
 5 Q. Okay. And did you analyze
 6 whether acetaminophen at the time of the
 7 delivery has a greater presence in the
 8 meconium than acetaminophen at, say, six
 9 months during the pregnancy?
 10 A. We couldn't do that because the
 11 data for -- during pregnancy were not
 12 complete.
 13 Q. Okay. Have you seen anyone
 14 else that has done that?
 15 A. I'd be happy to see any other
 16 study.
 17 Q. So the answer, Dr. Baccarelli,
 18 is, as you sit here today, you haven't seen
 19 that other than in your own abstract,
 20 correct?
 21 MR. SNIDOW: Objection to the
 22 form.
 23 THE WITNESS: Again, there is
 24 plenty of literature supporting
 25 that meconium is a great biomarker.

<p style="text-align: right;">Page 166</p> <p>1 It's a great substrate to measure this</p> <p>2 type of biomarkers.</p> <p>3 QUESTIONS BY MR. MURDICA:</p> <p>4 Q. Was that my question?</p> <p>5 MR. SNIDOW: Objection to the</p> <p>6 form.</p> <p>7 THE WITNESS: I think it was.</p> <p>8 QUESTIONS BY MR. MURDICA:</p> <p>9 Q. Okay. You just testified that</p> <p>10 you studied whether exposure during pregnancy</p> <p>11 or during labor and delivery is represented</p> <p>12 in meconium.</p> <p>13 You remember that?</p> <p>14 A. Say that again?</p> <p>15 Q. Okay. Your testimony is that</p> <p>16 you studied exposure during pregnancy and</p> <p>17 then at labor and delivery to look at the</p> <p>18 relationship of the compound in meconium,</p> <p>19 correct?</p> <p>20 MR. SNIDOW: Objection to the</p> <p>21 form.</p> <p>22 THE WITNESS: So I -- we did</p> <p>23 publish an abstract, and the data we</p> <p>24 had were incomplete. They made us</p> <p>25 feel confident that what has been</p>	<p style="text-align: right;">Page 168</p> <p>1 any other study attempt to capture the amount</p> <p>2 of acetaminophen in meconium based on</p> <p>3 exposure either during the second trimester</p> <p>4 or at labor and delivery?</p> <p>5 MR. SNIDOW: Objection to the</p> <p>6 form.</p> <p>7 THE WITNESS: Again, it is very</p> <p>8 consistent with biological</p> <p>9 plausibility that the -- that meconium</p> <p>10 reflects five, six months' worth of</p> <p>11 exposure. So this is how it has been</p> <p>12 used in hundreds of papers. So I</p> <p>13 don't have any reasonable doubt that</p> <p>14 there -- because this very</p> <p>15 well-accepted in the toxicology</p> <p>16 community.</p> <p>17 QUESTIONS BY MR. MURDICA:</p> <p>18 Q. But you can't point me to</p> <p>19 another paper, correct?</p> <p>20 A. I can point you to papers.</p> <p>21 Q. On acetaminophen.</p> <p>22 Doctor, my question was very</p> <p>23 specific. It was as to acetaminophen and</p> <p>24 exposure at the time of delivery versus in</p> <p>25 the second trimester.</p>
<p style="text-align: right;">Page 167</p> <p>1 reported countless times in the</p> <p>2 literature, that meconium reflects</p> <p>3 five months of exposure, was true also</p> <p>4 in our study.</p> <p>5 QUESTIONS BY MR. MURDICA:</p> <p>6 Q. Okay. My question is, was</p> <p>7 there a difference in your abstract between</p> <p>8 acetaminophen exposure at delivery and</p> <p>9 acetaminophen exposure during, let's say, the</p> <p>10 second trimester?</p> <p>11 A. If you would like to discuss</p> <p>12 that abstract, I'm happy to review it now.</p> <p>13 Q. Do you remember?</p> <p>14 A. I remember that the data were</p> <p>15 consistent with our hypothesis --</p> <p>16 Q. Okay.</p> <p>17 A. -- that we didn't -- that</p> <p>18 toxicant didn't cause any concern.</p> <p>19 If you want to discuss it --</p> <p>20 discuss it in detail, I'm happy to review it</p> <p>21 with you, and I'll tell you why --</p> <p>22 Q. Sure.</p> <p>23 A. -- I have this opinion.</p> <p>24 Q. Sitting here, other than this</p> <p>25 abstract you're talking about, have you seen</p>	<p style="text-align: right;">Page 169</p> <p>1 Have you seen any other paper</p> <p>2 that examined that specifically?</p> <p>3 A. So --</p> <p>4 MR. SNIDOW: Objection to the</p> <p>5 form.</p> <p>6 Go ahead.</p> <p>7 THE WITNESS: We published a</p> <p>8 paper in 2019. There is a lot of</p> <p>9 literature reported here that shows</p> <p>10 that acetaminophen -- sorry, that</p> <p>11 meconium is great biomarkers that</p> <p>12 reflects five to six months of</p> <p>13 exposure.</p> <p>14 QUESTIONS BY MR. MURDICA:</p> <p>15 Q. Okay. And are you referring to</p> <p>16 the Laue paper?</p> <p>17 A. No, I'm referring to the</p> <p>18 Cassoulet paper, 2019.</p> <p>19 Q. Okay.</p> <p>20 A. It's in my -- in it's my</p> <p>21 reference list.</p> <p>22 (Baccarelli Exhibit 90 marked</p> <p>23 for identification.)</p> <p>24 QUESTIONS BY MR. MURDICA:</p> <p>25 Q. Okay. Let's take a look at the</p>

Page 170

1 Laue paper, and we'll get that one here.
 2 Dr. Baccarelli, you have in
 3 front of you what's been marked as
 4 Exhibit 90.
 5 Do you recognize it?
 6 A. Yes.
 7 Q. Okay. Where was this
 8 published?
 9 A. It was published in
 10 toxicology -- Toxicological Sciences in 2019.
 11 Q. Okay. And you reviewed and
 12 revised this before it was published,
 13 correct?
 14 A. Of course.
 15 Q. Okay. And the first attempt to
 16 publish this was rejected, correct?
 17 A. Yes, as often happens.
 18 Q. Yeah.
 19 A. I -- we always shoot high so we
 20 can be reject -- we don't like a paper if
 21 it's not rejected.
 22 Q. Understood.
 23 And you always shoot high, and
 24 that's why you tried to put it in the Gray
 25 journal, right?

Page 171

1 A. I can't remember that.
 2 Q. Okay. Do you know what the
 3 Gray journal is?
 4 A. I -- can you -- can you explain
 5 what the Gray journal is to me?
 6 Q. Well, I think it's important
 7 to -- so you don't know what the Gray journal
 8 is, right?
 9 A. I don't call journals by
 10 colors, usually. I call them by their names.
 11 So if you have a journal that other people
 12 uses, I'm afraid I don't know it.
 13 Q. Do you know what the Green
 14 journal is?
 15 A. No. I don't know any of the
 16 colors. Perhaps I'm color blind.
 17 Q. Well, I think we established
 18 you're not a board certified obstetrician,
 19 right?
 20 A. I don't think you need an
 21 obstetrician here.
 22 Q. Okay. So you shot high by
 23 trying to get the paper in the American
 24 Journal of Obstetrics and Gynecology,
 25 correct?

Page 172

1 A. Well, we haven't shoot that
 2 high then.
 3 Q. That --
 4 A. That's -- we -- I don't think
 5 we shot that high, if you tell me that.
 6 Q. Okay. Because they rejected
 7 you, you have a low opinion of them now?
 8 A. Oh, every journal rejected me.
 9 I -- probably 600 papers, I probably sent
 10 papers to 1,000 journals. You can be sure
 11 that every journal in the world has rejected
 12 me at some time.
 13 I hold no -- no -- I hold no --
 14 not really no anger to anyone.
 15 Q. It sounds like sour grapes,
 16 Doctor. But if you want to criticize the
 17 American Journal of Obstetrics and
 18 Gynecology, feel free.
 19 MR. SNIDOW: Objection to form.
 20 And again, Jim, look, I'm
 21 behaving. You need to behave. It's
 22 out of line. You know it. Ask him a
 23 question if you want.
 24 MR. MURDICA: You are not
 25 behaving. Your witness is saying

Page 173

1 plenty of things that are not in line,
 2 and I'm fine with my conduct. If you
 3 have a problem with it, you can call
 4 Judge Cote.
 5 MR. SNIDOW: Okay.
 6 MR. MURDICA: And you need to
 7 stop interrupting.
 8 MR. SNIDOW: I wasn't.
 9 But if you want to go to the
 10 judge with "it sounds like sour
 11 grapes, Doctor," I'm fine with that.
 12 But I'm asking you --
 13 MR. MURDICA: Well, it would be
 14 you going to the judge, okay? And
 15 you're interrupting my examination.
 16 MR. SNIDOW: Okay.
 17 MR. MURDICA: So would you like
 18 to go to the judge?
 19 MR. SNIDOW: I would not.
 20 MR. MURDICA: Okay. Then you
 21 need to be quiet.
 22 THE WITNESS: In that year,
 23 2019, I published about 70 papers. I
 24 don't keep a list of the -- of the
 25 journals that rejected me. And as you

Page 174

1 heard me say just before, I didn't
 2 even remember that we sent it to the
 3 journal you mentioned. So it's really
 4 impossible that I'm angry at any
 5 OB/GYN journal.
 6 Just -- and also, I'm an
 7 epidemiologist. I would rather have
 8 this published in the American Journal
 9 of Epidemiology than in a specialty
 10 OB/GYN journal. I really would have
 11 preferred that, if you asked me.
 12 QUESTIONS BY MR. MURDICA:
 13 Q. Well, do you recall,
 14 Dr. Baccarelli, the decision process, since
 15 this was about pregnancy outcomes, to go to
 16 an obstetrics and gynecology journal?
 17 A. I don't remember.
 18 Q. Okay. Do you remember why it
 19 was rejected?
 20 A. I don't remember.
 21 (Baccarelli Exhibit 91 marked
 22 for identification.)
 23 QUESTIONS BY MR. MURDICA:
 24 Q. Okay. Doctor, you now have in
 25 front of you what's been marked as

Page 175

1 Exhibit 91.
 2 A. Uh-huh.
 3 Q. Do you recognize this as one of
 4 your e-mails?
 5 A. This looks like it.
 6 Q. Okay. When's the last time you
 7 looked at this e-mail?
 8 A. Probably on Monday, May 21,
 9 2018.
 10 Q. Okay. Do you need a second to
 11 review it, or can I ask you questions about
 12 it?
 13 A. Let me review it.
 14 Okay.
 15 Q. Okay. So do you agree, Doctor,
 16 that this reflects the American Journal of
 17 Obstetrics and Gynecology's critique and
 18 rejection of the Hannah Laue paper?
 19 A. No, this reflect individual
 20 opinion of three reviewers, one, two, three,
 21 and an editor who is probably someone --
 22 here, there's someone by the name of Sandra
 23 Perrine. So I don't know who -- who are the
 24 editors here. They don't disclose the
 25 editors.

Page 176

1 There are three people who are
 2 anonymous, and so one seems to be staff. So
 3 this doesn't say who did this.
 4 Q. Doctor, you still have in front
 5 of you Exhibit 90, right, which is the Laue
 6 article published in the Journal of
 7 Toxicology?
 8 A. Yes.
 9 Q. Okay. What you're holding in
 10 your hand as Exhibit 91 occurred before that
 11 publication, correct?
 12 A. That is correct.
 13 Q. Okay. And this, what you're
 14 holding in your hand, Exhibit 91, documents a
 15 rejection by the journal of American -- by
 16 the American Journal of Obstetrics and
 17 Gynecology for the same article, correct?
 18 A. That is correct.
 19 Q. Okay. And, in fact, they say
 20 it is unlikely that the revision of such a
 21 manuscript will alter its status, correct?
 22 A. That is what they say.
 23 Q. Okay.
 24 A. It's not -- I think that --
 25 this is what they say. It really means that

Page 177

1 they were not interested in the paper.
 2 Q. Right.
 3 A. When editors accept or reject a
 4 journal {sic}, as you can see here, they say
 5 also, we can only accept 20 percent of
 6 submissions. And they'll accept those work
 7 which received the highest priority ratings
 8 with respect to perceived reader -- reader
 9 interest, scientific quality, and timeliness
 10 of such a matter.
 11 So the priority status is about
 12 whether their readers are interested or not,
 13 the quality of -- the scientific quality and
 14 the timeliness. And I don't think you can
 15 tell which of the three they used.
 16 Q. And nevertheless, Doctor, they
 17 did give you the comments from the three
 18 reviewers, correct?
 19 A. Correct.
 20 Q. And what you told Dr. Laue is
 21 to not worry about the comments, right?
 22 A. I told, don't worry -- this is
 23 a student. I want to tell her, don't get
 24 upset. Don't take it personal. There is no
 25 reason to take it personal.

Page 178

1 You are implying that I take it
 2 personal. My message here is, please,
 3 Hannah, don't take it personal. This will
 4 happen over and over again over your career.
 5 It's not about you. Just work on it and take
 6 everything seriously, and whatever is
 7 addressable, we'll do it.
 8 Q. That's what -- let me see if I
 9 read this correctly.
 10 You're recommending another
 11 journal. You say, don't worry too much about
 12 the comments. If there's anything you feel
 13 you should have done, that is okay;
 14 otherwise, just resubmit it.
 15 Right?
 16 MR. SNIDOW: Objection to form.
 17 THE WITNESS: So you understand
 18 that worry is an emotion.
 19 QUESTIONS BY MR. MURDICA:
 20 Q. I'm sorry.
 21 A. I say, do not worry too much
 22 about the comments. When someone worries,
 23 they have an emotion. So I say, don't -- do
 24 not worry. Don't be emotional about it.
 25 And, okay, this is my e-mail,

Page 179

1 so I can explain what it means. Because what
 2 it really meant to say, Hannah, I know you
 3 are new to the business, but never get it
 4 personal. Don't get upset. Do not worry.
 5 I didn't say, do not do work.
 6 She -- as long as I know, she
 7 did work. If there is anything you feel you
 8 should have done, now doing it.
 9 Q. Okay. Some of the comments --
 10 did you have a chance to look at the reviewer
 11 comments?
 12 A. Not -- not all of them.
 13 Q. Okay. Did you see that some of
 14 them are about the same questions I was
 15 asking you about meconium? Right?
 16 A. No, I didn't.
 17 Q. Okay. Take a look at the page
 18 that ends in 429, reviewer number 2, second
 19 half from the bottom.
 20 A. 429?
 21 Q. Yep.
 22 Reviewer number 2.
 23 A. Uh-huh.
 24 Q. Paragraph 1, introduction.
 25 A. Yeah.

Page 180

1 Q. Let me know when you've had a
 2 chance to look at that.
 3 A. Fantastic. Yeah.
 4 Q. Okay. This reviewer, whoever
 5 they are, is asking the same questions I was
 6 just asking you, correct?
 7 MR. SNIDOW: Objection to the
 8 form.
 9 THE WITNESS: They're asking a
 10 similar question, and they -- it's a
 11 question that, again, we're interested
 12 in the dose in the baby.
 13 I think this reviewer is
 14 missing the point, that this is a
 15 study about the dose in the baby and
 16 neurodevelopmental outcomes. It's not
 17 a study about the dose in the mother.
 18 It's the dose -- the big advantage of
 19 this study is that we are measuring
 20 the dose in the baby.
 21 If the reviewer is interested
 22 in this, that's okay.
 23 I wish we had the data to make
 24 this reviewer happy. Not that I think
 25 it was important for the study, but --

Page 181

1 QUESTIONS BY MR. MURDICA:
 2 Q. Right.
 3 A. -- in this case the reviewer
 4 asked the question. They're entitled to ask
 5 this question. I'm entitled to decide to
 6 move forward with the paper, nonetheless.
 7 Q. Right.
 8 And you did move forward with
 9 the paper without addressing this question,
 10 correct?
 11 A. The question is addressed in
 12 the paper. We have references about the use
 13 of meconium. So the reviewer probably didn't
 14 read the references.
 15 Q. Okay. One of the questions
 16 here is -- tell me if I've got this right --
 17 is there any previously reported specific
 18 data about acetaminophen use in pregnancy and
 19 its presence in meconium.
 20 You saw that, right?
 21 A. I see the question.
 22 Q. Right.
 23 And there is no paper that
 24 show -- that correlates a dose taken at a
 25 particular time during pregnancy with a

<p style="text-align: right;">Page 182</p> <p>1 particular concentration in the meconium, 2 correct?</p> <p>3 MR. SNIDOW: Objection to form.</p> <p>4 THE WITNESS: Again, if the 5 question were important, I would have 6 not published this paper.</p> <p>7 This paper is about meconium in 8 the baby, and that is a much better 9 measurement than asking a mother to 10 report their use. It's about 11 toxicology.</p> <p>12 This is called a biomarker of 13 internal dose. The internal dose is 14 the strongest type of evidence. It 15 means there is chemical in the baby's 16 tissues that in this case, by the way, 17 they were causing very little or 18 nothing.</p> <p>19 But in the -- it turned out, 20 actually, in the later paper by Baker 21 to be a problem.</p> <p>22 QUESTIONS BY MR. MURDICA:</p> <p>23 Q. I understand, Doctor, that you 24 don't think it's a relevant question, but I'm 25 going to ask it again --</p>	<p style="text-align: right;">Page 184</p> <p>1 There's no paper that 2 correlates a dose taken at a particular time 3 during pregnancy and a particular 4 concentration in meconium.</p> <p>5 Correct, Doctor?</p> <p>6 MR. SNIDOW: Objection.</p> <p>7 THE WITNESS: Same --</p> <p>8 MR. SNIDOW: Sorry. Objection 9 to the form.</p> <p>10 QUESTIONS BY MR. MURDICA:</p> <p>11 Q. There is no paper that 12 correlates a dose of acetaminophen taken at a 13 particular time during pregnancy with a 14 particular concentration in the meconium, 15 correct?</p> <p>16 A. Again, it is very well-known 17 that what you said is the case, that there is 18 an association between chemicals taken during 19 pregnancy and what gets stored in meconium.</p> <p>20 In this case, we didn't need to 21 worry about this. And, again, I didn't -- I 22 didn't use that -- I didn't make that link to 23 reach my conclusions.</p> <p>24 This is one of the 30 papers 25 that is associated with the -- that shows</p>
<p style="text-align: right;">Page 183</p> <p>1 A. Please do.</p> <p>2 Q. -- and see if you can -- see if 3 you can answer it.</p> <p>4 There is no paper that 5 correlates a dose taken at a particular time 6 during pregnancy with a particular 7 concentration in the meconium, correct?</p> <p>8 MR. SNIDOW: Objection to form.</p> <p>9 THE WITNESS: I would like to 10 say that there is overwhelming 11 evidence that drugs and chemicals to 12 which women are exposed during 13 pregnancy result -- gets archived in 14 the meconium, and the meconium is a 15 valid guide of toxic exposure.</p> <p>16 If you think there is a reason 17 why acetaminophen should be different 18 from any other chemicals -- I 19 understand we're talking about 20 acetaminophen, but is acetaminophen a 21 special chemical.</p> <p>22 QUESTIONS BY MR. MURDICA:</p> <p>23 Q. Okay. Please try to listen 24 very closely to the question, because you 25 didn't get it.</p>	<p style="text-align: right;">Page 185</p> <p>1 associations. And again, I didn't need to 2 have that data to reach my conclusions.</p> <p>3 Q. And, Doctor, I didn't ask you 4 if you needed it. I didn't ask if it was 5 important. I just asked if it exists.</p> <p>6 And it does not exist, correct?</p> <p>7 MR. SNIDOW: Objection to the 8 form.</p> <p>9 THE WITNESS: So I want to say 10 that we have overwhelming evidence 11 that meconium is a good archive of 12 chemical exposures. It's very 13 well-accepted in the literatures. 14 There are 30 years of research 15 studying the meconium's chronicles, 16 the level of exposures in the last 17 five, six months of pregnancy. This 18 is very well-known.</p> <p>19 This is -- our use of meconium 20 is not new. It is something that has 21 been done many times.</p> <p>22 So you might be right that 23 there is no paper specifically on 24 acetaminophen, but again, we then 25 needed it for the paper because the</p>

<p style="text-align: right;">Page 186</p> <p>1 dose is more in the meconium. And the</p> <p>2 fetal tissue is more powerful that --</p> <p>3 that in -- in the -- in the -- in the</p> <p>4 reported questionnaires.</p> <p>5 And also, again, I didn't use</p> <p>6 this paper only in the literature.</p> <p>7 This is one of 30 pieces of evidence</p> <p>8 that I used. So that is particularly</p> <p>9 important to know that -- whether</p> <p>10 there is an association or not.</p> <p>11 Whether it's a paper that reports an</p> <p>12 association or not is not relevant to</p> <p>13 my conclusions.</p> <p>14 QUESTIONS BY MR. MURDICA:</p> <p>15 Q. Doctor, I understand you think</p> <p>16 it's irrelevant, it's not important, but I am</p> <p>17 entitled to get an answer.</p> <p>18 So you agree with me that there</p> <p>19 is no such paper that I --</p> <p>20 A. I gave you an answer in the</p> <p>21 long answer. Don't let me restart again.</p> <p>22 Q. I really don't want you to</p> <p>23 restart again.</p> <p>24 Are you able to answer it yes</p> <p>25 or no? Does such a paper exist, Doctor?</p>	<p style="text-align: right;">Page 188</p> <p>1 when Mr. Snidow asks you questions.</p> <p>2 All I'm asking you is, there is</p> <p>3 no paper that exists today that correlates</p> <p>4 acetaminophen dose given to a mother at some</p> <p>5 particular time during pregnancy and the</p> <p>6 concentration that results in the meconium,</p> <p>7 correct?</p> <p>8 MR. SNIDOW: Objection to form.</p> <p>9 THE WITNESS: So I -- let me --</p> <p>10 let me repeat what I said step by</p> <p>11 step.</p> <p>12 QUESTIONS BY MR. MURDICA:</p> <p>13 Q. Okay. Doctor, if you're going</p> <p>14 to repeat what you said, we can just -- we</p> <p>15 can just call the deposition now because --</p> <p>16 A. Okay. I'm okay. I'm okay with</p> <p>17 that. I mean --</p> <p>18 Q. Okay.</p> <p>19 A. -- I need a bathroom break, so</p> <p>20 soon.</p> <p>21 MR. SNIDOW: Okay. Take a</p> <p>22 break.</p> <p>23 MR. MURDICA: Okay. We're not</p> <p>24 going to continue unless you want to</p> <p>25 talk to him about answering questions.</p>
<p style="text-align: right;">Page 187</p> <p>1 A. I answered already.</p> <p>2 MR. SNIDOW: Okay. Hold on.</p> <p>3 Hold on.</p> <p>4 MR. MURDICA: There's no hold</p> <p>5 on. You be quiet over there.</p> <p>6 MR. SNIDOW: I get to object to</p> <p>7 form, and I am.</p> <p>8 Object to the form.</p> <p>9 MR. MURDICA: Look, I would</p> <p>10 have every ground in the world to go</p> <p>11 get the judge here about the answers</p> <p>12 to these questions.</p> <p>13 MR. SNIDOW: Oh, not to my</p> <p>14 objections?</p> <p>15 MR. MURDICA: No.</p> <p>16 MR. SNIDOW: Okay.</p> <p>17 MR. MURDICA: Well, that's</p> <p>18 different. That's a separate issue.</p> <p>19 MR. SNIDOW: Thank you.</p> <p>20 MR. MURDICA: One I'm not</p> <p>21 dealing with right now.</p> <p>22 MR. SNIDOW: Okay.</p> <p>23 QUESTIONS BY MR. MURDICA:</p> <p>24 Q. Doctor, I understand all the</p> <p>25 things you want to say, and you can say them</p>	<p style="text-align: right;">Page 189</p> <p>1 Because in seven hours, we can't get</p> <p>2 through this.</p> <p>3 And I think if a court read</p> <p>4 those last six questions where I asked</p> <p>5 the same thing over and over, I think</p> <p>6 we'd get relief.</p> <p>7 MR. SNIDOW: Okay. So, first</p> <p>8 of all, Jim, he is answering your</p> <p>9 questions. You've asked him the</p> <p>10 question and actually gotten the</p> <p>11 answer that I thought you wanted,</p> <p>12 which he said, you may be right,</p> <p>13 there's no paper specific on</p> <p>14 acetaminophen.</p> <p>15 That's what you've been asking</p> <p>16 him. He gave it to you. I know you</p> <p>17 want some special clip, but he's given</p> <p>18 you the answer.</p> <p>19 So he's being fully responsive.</p> <p>20 He thinks it's important --</p> <p>21 MR. MURDICA: On the second</p> <p>22 time --</p> <p>23 MR. SNIDOW: Hold on. Hold on.</p> <p>24 Okay. Hold on.</p> <p>25 He thinks it's important to add</p>

<p style="text-align: right;">Page 190</p> <p>1 context, as he said. But you have the</p> <p>2 specific answer that you've been</p> <p>3 asking for. So why don't you just</p> <p>4 move on.</p> <p>5 MR. MURDICA: He's being</p> <p>6 obstructionist.</p> <p>7 MR. SNIDOW: He's not. He's</p> <p>8 absolutely not.</p> <p>9 MR. MURDICA: Okay. If you --</p> <p>10 if you think that -- how much time</p> <p>11 have we used? Okay. Let's go to the</p> <p>12 Court.</p> <p>13 VIDEOGRAPHER: Want to go off</p> <p>14 the record?</p> <p>15 MR. MURDICA: Yeah, let's off</p> <p>16 the record. We're going to call the</p> <p>17 Court.</p> <p>18 MR. SNIDOW: Okay.</p> <p>19 VIDEOGRAPHER: The time right</p> <p>20 now is 11:29 a.m. We are off the</p> <p>21 record.</p> <p>22 (Off the record at 11:29 a.m.)</p> <p>23 VIDEOGRAPHER: The time right</p> <p>24 now is 11:52 a.m. We are back on the</p> <p>25 record.</p>	<p style="text-align: right;">Page 192</p> <p>1 Do you see that reviewer's</p> <p>2 question?</p> <p>3 A. I do.</p> <p>4 Q. Okay. And, Dr. Baccarelli,</p> <p>5 with the information that you have, that's</p> <p>6 not a question that can be answered, correct?</p> <p>7 A. As I said before, there is a</p> <p>8 question that can be answered. We know that</p> <p>9 there is a correlation between chemicals in</p> <p>10 general ingested by the mother, so the</p> <p>11 mothers are exposed to in any other form, and</p> <p>12 the levels in the baby.</p> <p>13 What I said before is that</p> <p>14 the -- we were interested in this study in</p> <p>15 the levels in the baby. So the meconium is a</p> <p>16 fetal tissue, it's in the fetus, so it's more</p> <p>17 relevant to the causation than it is what the</p> <p>18 mothers might have ingested.</p> <p>19 That said, I agree with you</p> <p>20 that as I sit here, I don't recall studies</p> <p>21 that have done the type of analysis you</p> <p>22 propose or that the reviewer is asking about.</p> <p>23 But again, that doesn't -- was</p> <p>24 not related to this study. This study was</p> <p>25 about the dose in the baby and exposure of</p>
<p style="text-align: right;">Page 191</p> <p>1 QUESTIONS BY MR. MURDICA:</p> <p>2 Q. Dr. Baccarelli, are you ready</p> <p>3 to proceed?</p> <p>4 A. Absolutely.</p> <p>5 Q. Okay. Dr. Baccarelli, you had</p> <p>6 in front of you Exhibit 91, and I was asking</p> <p>7 you questions about if you recall some of the</p> <p>8 reviewers' comments on the Laue article.</p> <p>9 A. Yes.</p> <p>10 Q. Okay. And we were on the page</p> <p>11 marked 429 at the bottom, and we were talking</p> <p>12 about the use of meconium.</p> <p>13 Let me know when you're there.</p> <p>14 A. Sorry, which page again?</p> <p>15 Q. It was 429 on the bottom --</p> <p>16 A. Yes.</p> <p>17 Q. -- reviewer number 2.</p> <p>18 Do you remember that sentence I</p> <p>19 was asking you about?</p> <p>20 The following sentence is the</p> <p>21 last sentence is -- in number 1. "How does</p> <p>22 maternal frequency of use, duration of time</p> <p>23 from ingestion to delivery in weeks or days,</p> <p>24 or maternal dose affect the amount detected</p> <p>25 in the meconium?"</p>	<p style="text-align: right;">Page 193</p> <p>1 the -- and the risk of ADHD and the -- sorry,</p> <p>2 in this case it was intelligence, I believe.</p> <p>3 We are talking about Laue here.</p> <p>4 And by the way, as I mentioned,</p> <p>5 we have a small data set in our study where</p> <p>6 we asked this question. We published an</p> <p>7 abstract where we defined differences.</p> <p>8 We found studies that are -- we</p> <p>9 found results that are consistent with the</p> <p>10 idea that what I said is true, that this is a</p> <p>11 good biomarker.</p> <p>12 Q. Dr. Baccarelli, what -- in that</p> <p>13 answer you just gave, what study are you</p> <p>14 talking about?</p> <p>15 You said you published</p> <p>16 something in other studies.</p> <p>17 A. We published an abstract in</p> <p>18 2017, I believe.</p> <p>19 Q. Oh, okay. You were talking</p> <p>20 about the abstract?</p> <p>21 A. Yeah.</p> <p>22 Q. Got it.</p> <p>23 All right. And if you turn to</p> <p>24 the next page.</p> <p>25 You see reviewer number 3?</p>

<p style="text-align: right;">Page 194</p> <p>1 A. Uh-huh.</p> <p>2 Q. And I want you to take a second</p> <p>3 to review this. If you look at reviewer</p> <p>4 number 3's major concern number 2, I'm going</p> <p>5 to ask you a question about the third</p> <p>6 sentence.</p> <p>7 A. Uh-huh.</p> <p>8 Q. Let me know when you're ready.</p> <p>9 A. Okay.</p> <p>10 Q. So reviewer number 3 has a</p> <p>11 concern that was similar to the one you had</p> <p>12 when you were helping on Baker 2020, and that</p> <p>13 is a -- is acetaminophen administration at</p> <p>14 the time of delivery something that can</p> <p>15 overrepresent acetaminophen in the meconium.</p> <p>16 Is that fair?</p> <p>17 A. Can you rephrase the ques --</p> <p>18 Q. Sure.</p> <p>19 A. You said I had a concern?</p> <p>20 Q. I thought you testified earlier</p> <p>21 that in Baker -- when you did Baker 2020,</p> <p>22 which we're going to get to, you did an</p> <p>23 analysis that removed the mothers who were</p> <p>24 administered acetaminophen at the time of</p> <p>25 childbirth, right?</p>	<p style="text-align: right;">Page 196</p> <p>1 the chemicals. So they get into the bowel of</p> <p>2 the baby and it gets there. It becomes an</p> <p>3 archival exposure, a cumulative archive.</p> <p>4 I wish we could go in there and</p> <p>5 dissect the meconium. But really what</p> <p>6 happens -- what happens there is that all of</p> <p>7 the chemicals get trapped there from the --</p> <p>8 from when meconium gets to start produced,</p> <p>9 which is around six months before delivery.</p> <p>10 Q. And, Dr. Baccarelli, if you</p> <p>11 look at reviewer concern number 4, it says,</p> <p>12 "The categorization of acetaminophen levels</p> <p>13 in meconium is hard to interpret. How much</p> <p>14 dose does a pregnant woman need to take to</p> <p>15 reach the detectable level of 55 nanograms</p> <p>16 per gram in meconium?"</p> <p>17 Do you see that question?</p> <p>18 A. Uh-huh.</p> <p>19 Q. Can you answer that question?</p> <p>20 A. Oh, yeah. So the question</p> <p>21 is -- is -- based on our data is pretty</p> <p>22 simple to believe, that because we found</p> <p>23 about 55 percent of women who had detectable</p> <p>24 level of meconium {sic}, that is</p> <p>25 approximately the same proportion of women</p>
<p style="text-align: right;">Page 195</p> <p>1 A. We did -- we did that analysis.</p> <p>2 Q. Okay. And the reason to do</p> <p>3 that analysis was to see if the acetaminophen</p> <p>4 burden at the time of delivery was</p> <p>5 overrepresented in the meconium, right?</p> <p>6 A. The reason -- the analysis that</p> <p>7 women get acetaminophen at birth, it can be</p> <p>8 doses that are due to the delivery, and they</p> <p>9 can be higher perhaps than before. So let's</p> <p>10 say -- let's look at it. We have the data.</p> <p>11 We can do a sensitivity analysis.</p> <p>12 And, again, we had -- we had a</p> <p>13 question about that. We addressed the</p> <p>14 question. There was no concern after -- the</p> <p>15 data showed that this concern is not valid.</p> <p>16 Q. Okay. And reviewer number 3 is</p> <p>17 expressing the same concern here, right?</p> <p>18 In the sentence it says, "Is it</p> <p>19 possible that the higher detectable levels</p> <p>20 reflect closer-in-time administration of</p> <p>21 acetaminophen to delivery rather than a</p> <p>22 higher level of accumulative dose?"</p> <p>23 A. Absolutely. But I think that</p> <p>24 the reviewer doesn't understand that</p> <p>25 acetaminophen -- sorry, that meconium traps</p>	<p style="text-align: right;">Page 197</p> <p>1 who gets -- who gets acetaminophen during</p> <p>2 pregnancy, that it's about the same</p> <p>3 situation; that the level of detection was</p> <p>4 set on purpose, by the way, by our</p> <p>5 biochemist. It was set to a level that is</p> <p>6 consistent with taking acetaminophen orally.</p> <p>7 If the level of detection were</p> <p>8 put lower -- and we have control on the level</p> <p>9 of detection. If the level of detection was</p> <p>10 put lower, we would pick up also</p> <p>11 acetaminophen in the environment.</p> <p>12 For instance, you can go in the</p> <p>13 public water in New York City or can take</p> <p>14 analysis of the sewers, you will find</p> <p>15 acetaminophen.</p> <p>16 Q. Okay. So --</p> <p>17 A. And this was set with -- to be</p> <p>18 consistent with a therapeutic dose.</p> <p>19 Q. So according -- what you're</p> <p>20 saying, Dr. Baccarelli, is that if a woman</p> <p>21 takes a single dose of oral acetaminophen at</p> <p>22 any time in the second or third trimester of</p> <p>23 pregnancy, it will be represented in meconium</p> <p>24 at a level of 55 nanograms per gram or</p> <p>25 higher, right?</p>

<p>Page 198</p> <p>1 A. What I'm saying is that the 2 detection limit was set to approximately -- 3 what you are saying is too conclusive -- 4 approximately to a level that can detect 5 therapeutic use of acetaminophen. 6 And also, I think you 7 appreciate that this analysis is not just a 8 yes or no. We have the levels from 55 to 9 levels much higher, and we did a 10 dose-response analysis. 11 So clearly it is not about 12 whether I can pick out acetaminophen or not, 13 but whether I can measure it. 14 And again, this very important 15 because we are measuring acetaminophen in the 16 fetus. So in the fetus, we have 17 acetaminophen that comes from the mother -- 18 unless you object it might -- it might come 19 from somewhere else. The fetus -- everything 20 that comes to the fetus comes from the 21 mother. 22 But the real important point of 23 this paper is that we are associating 24 acetaminophen in the fetus, the molecule, 25 with neurodevelopment.</p>	<p>Page 200</p> <p>1 form is why this gets positive in meconium. 2 Q. Okay. Doctor, I'm going to try 3 this once more. 4 This reviewer's question was, 5 "How much dose does a pregnant woman need to 6 take to reach the detectable level of 7 55 nanograms per gram in meconium?" 8 Can you answer that question? 9 A. I did already answer. 10 Q. Okay. How much dose? What 11 dose? 12 A. I did answer that -- I'm 13 reasonably comfortable to say that this -- 14 the level of detection is consistent with 15 taking acetaminophen by the pregnant woman 16 orally. 17 At the same time, I also 18 answered that this is not important to this 19 paper. This paper is about a different 20 question, which is, is acetaminophen in the 21 baby, in the fetus, in this case, associated 22 with neurodevelopmental outcome. 23 The question about how many -- 24 the question about whether women takes it or 25 not and the association with acetaminophen is</p>
<p>Page 199</p> <p>1 In this case, by the way, we 2 don't find an association, but in Baker we 3 do. 4 And that really is the -- that 5 really is the -- a great level of evidence 6 for a toxicologist, because a toxicologist 7 wants to measure in the tissue. A 8 toxicologist not typically worried about 9 what the -- what is the level of exposure. 10 They're worried about can we get something 11 that's more proximal. 12 You can -- I think you 13 understand that once a mom takes 14 acetaminophen, it goes into the mom's body, 15 it goes into -- through the placenta, it goes 16 into the fetus. So having it in the fetus is 17 more proximal to the effect. 18 So this is why this paper is 19 important. This is why I was not worried 20 about this situation. 21 And again, if you want to me -- 22 to answer, I mean, I don't have -- I don't 23 have absolute certainty that what I say is 24 true, but as I sit here today, I believe that 25 taking acetaminophen orally in the -- in the</p>	<p>Page 201</p> <p>1 proven by at least another 29 papers. So I 2 don't need this paper to talk about -- to 3 talk about the general causation of women 4 taking acetaminophen. 5 Q. Okay. The next line says, "How 6 much more does the pregnant woman need to 7 take to reach the median concentration of 8 59.9 nanograms per gram used in the study?" 9 Can you answer that question, 10 Dr. Baccarelli? 11 A. I would answer the same way I 12 answered before. It's exactly the same. 13 Again, this reviewer misses the idea that we 14 are looking at acetaminophen versus -- in the 15 fetus and neurodevelopment. 16 Q. Okay. Dr. Baccarelli, is it 17 your testimony that one pill taken in the 18 second or third -- 1,000-milligram 19 acetaminophen pill taken in the second or 20 third trimester by a pregnant woman will 21 result in a meconium concentration of 22 acetaminophen of more than 55 nanograms per 23 gram? 24 A. No, it is not my testimony. 25 Q. Okay. How much -- if you</p>

<p style="text-align: right;">Page 202</p> <p>1 take -- if a pregnant woman takes</p> <p>2 acetaminophen in the second trimester, how</p> <p>3 many pills does it take -- how many</p> <p>4 thousand-milligram pills does it take to get</p> <p>5 to 55 nanograms per gram of meconium? Do you</p> <p>6 know?</p> <p>7 A. We know exactly what we need to</p> <p>8 know, which is the more pills you take, the</p> <p>9 higher the level in the fetus. This is what</p> <p>10 I want to know.</p> <p>11 If you want to know a different</p> <p>12 answer, that is not something we can address</p> <p>13 based on this paper or the data that I'm</p> <p>14 aware of.</p> <p>15 But we know, A, that there is a</p> <p>16 dose-response relationship between any type</p> <p>17 of chemicals women take and meconium. We</p> <p>18 know that meconium is a very well-established</p> <p>19 substrate for this type of analysis. We know</p> <p>20 that there is a strong correlation between</p> <p>21 what chemicals women are exposed to and</p> <p>22 meconium.</p> <p>23 In this case, we know that the</p> <p>24 levels of meconium of acetaminophen are not</p> <p>25 associated, by the way, in this paper with</p>	<p style="text-align: right;">Page 204</p> <p>1 A. You mean after delivery?</p> <p>2 Q. Yes.</p> <p>3 A. It's highly unlikely.</p> <p>4 Q. Are you familiar with</p> <p>5 medications given for circumcisions?</p> <p>6 A. Yes.</p> <p>7 Q. Is acetaminophen given to male</p> <p>8 babies being circumcised?</p> <p>9 A. It is possible.</p> <p>10 Q. Okay. Does it happen within</p> <p>11 the first 24 hours of birth?</p> <p>12 A. It depends on the uses of -- it</p> <p>13 depends on whether it's done at the hospital</p> <p>14 or not.</p> <p>15 Q. If it's done at the hospital,</p> <p>16 it's typically done within the first</p> <p>17 24 hours, correct?</p> <p>18 A. I -- I really don't know</p> <p>19 what -- how circumcision is done. I'm so</p> <p>20 sorry.</p> <p>21 If you want to tell me, I'll be</p> <p>22 happy, but I don't think that is relevant,</p> <p>23 really.</p> <p>24 Again, most of these babies</p> <p>25 pass meconium within 24 hours. You</p>
<p style="text-align: right;">Page 203</p> <p>1 IQ, with a measure of IQ. And they're</p> <p>2 associated in the larger study of Baker with</p> <p>3 ADHD and other outcomes.</p> <p>4 So, again, what I look as an</p> <p>5 epidemiologist -- you can understand that</p> <p>6 epidemiology is about associations, so it's</p> <p>7 about correlations. And I have all the</p> <p>8 correlations I need in this case to state</p> <p>9 with certainty that this data are valid.</p> <p>10 Q. Okay. Is that the best you can</p> <p>11 answer that question, Doctor?</p> <p>12 A. I can go on for another hour if</p> <p>13 you want to, but it's already a pretty</p> <p>14 comprehensive answer.</p> <p>15 Q. Dr. Baccarelli, when is</p> <p>16 meconium collected from the baby?</p> <p>17 A. In -- usually within 24 hours</p> <p>18 of delivery.</p> <p>19 Q. Okay. And when does meconium</p> <p>20 stop collect -- stop representing maternal</p> <p>21 ingestion?</p> <p>22 A. About the time the baby is</p> <p>23 delivered.</p> <p>24 Q. Okay. And can meconium</p> <p>25 represent the baby's acetaminophen usage?</p>	<p style="text-align: right;">Page 205</p> <p>1 understand that acetaminophen needs to be</p> <p>2 given to the baby. It needs to -- to get</p> <p>3 absorbed, it takes a few hours. It needs to</p> <p>4 work with circulation. It needs to pass into</p> <p>5 the bile, into the liver. It needs to go --</p> <p>6 that takes at least 12 or 14 hours. So there</p> <p>7 might be some people.</p> <p>8 At the same time, it's entirely</p> <p>9 poss -- if you're asking whether this</p> <p>10 reflects postnatal exposure, let's say that I</p> <p>11 agree with that, which is honestly very</p> <p>12 unlikely. But there is plenty of papers that</p> <p>13 have asked these questions in the literature,</p> <p>14 not this one, whether it's prenatal exposure</p> <p>15 confounded by postnatal exposure. So the</p> <p>16 culprit -- the culprit will be postnatal, not</p> <p>17 prenatal.</p> <p>18 The answer is a resounding no.</p> <p>19 It is the preclinical exposure.</p> <p>20 Perhaps the postnatal is a</p> <p>21 problem, and you might have a problem in the</p> <p>22 future about postnatal exposure. But</p> <p>23 postnatal exposure doesn't artifactually</p> <p>24 makes appear the prenatal exposure to be</p> <p>25 associated with ADHD, ASD or</p>

<p style="text-align: right;">Page 206</p> <p>1 neurodevelopmental disorder.</p> <p>2 So even in the unlikely</p> <p>3 circumstance that meconium reflects a tiny</p> <p>4 bit, really, it needs to be very small, of</p> <p>5 the exposure to Tylenol after pregnancy.</p> <p>6 Again, it's not the postnatal exposure that</p> <p>7 matters here; it's the prenatal.</p> <p>8 There are other kinds of</p> <p>9 studies that shows the prenatal.</p> <p>10 Q. So, Dr. Baccarelli, the most</p> <p>11 recent exposure of the child prior to passing</p> <p>12 the meconium is not reflected more strongly</p> <p>13 than more distant exposures earlier in the</p> <p>14 pregnancy, correct?</p> <p>15 A. As I mentioned, the meconium</p> <p>16 is -- traps the chemicals over time, so</p> <p>17 meconium reflects cumulative exposure over</p> <p>18 five months. It is well-established.</p> <p>19 There is a slightly increase</p> <p>20 over -- overrepresentation of chemicals that</p> <p>21 come in the -- over time because the meconium</p> <p>22 volume tends to grow a little more as the</p> <p>23 baby because bigger.</p> <p>24 Q. Okay. And Dr. Baccarelli, I</p> <p>25 think, agrees with me that it's possible that</p>	<p style="text-align: right;">Page 208</p> <p>1 that as a possible contributor to</p> <p>2 acetaminophen burden in the meconium.</p> <p>3 And you've given those to us,</p> <p>4 right?</p> <p>5 A. I -- there are six months of</p> <p>6 exposure through the mothers that is</p> <p>7 reflected in. There might be a few hours</p> <p>8 that the babies are exposed to in the -- in</p> <p>9 the -- in the -- postnatally. There might be</p> <p>10 some meconium that gets in, but I think it's</p> <p>11 very unlikely that it gets in.</p> <p>12 Q. Are babies exposed to</p> <p>13 acetaminophen through breastfeeding?</p> <p>14 A. If the mother is taking</p> <p>15 acetaminophen, of course.</p> <p>16 Q. Okay. Can that contribute to</p> <p>17 meconium burden?</p> <p>18 A. Again, that is before. As you</p> <p>19 understand, breast milk is ingested orally.</p> <p>20 Acetaminophen, the baby can get ingested</p> <p>21 orally or IV.</p> <p>22 That's exactly the same</p> <p>23 response as before. It's highly unlikely</p> <p>24 that the results are driven by meconium -- by</p> <p>25 acetaminophen administered after pregnancy.</p>
<p style="text-align: right;">Page 207</p> <p>1 meconium can reflect use of acetaminophen</p> <p>2 directly by the baby for something like</p> <p>3 circumcision in the first 24 hours?</p> <p>4 A. I just said it's very unlikely.</p> <p>5 Q. Okay. And is that based on any</p> <p>6 analysis that you did or just your own</p> <p>7 opinion without being an expert on</p> <p>8 circumcision and what medications are</p> <p>9 administered?</p> <p>10 MR. SNIDOW: Objection to form.</p> <p>11 THE WITNESS: I don't claim to</p> <p>12 be an expert on circumcision. To be</p> <p>13 honest, I don't want to be.</p> <p>14 But the -- I think it's based</p> <p>15 on logic. It's based on fact. It's</p> <p>16 based on timing. It's based on the</p> <p>17 most reasonable assessment I can do.</p> <p>18 And if you have any point in my</p> <p>19 response that you don't agree with,</p> <p>20 I'm happy to discuss any of the points</p> <p>21 I guided you through.</p> <p>22 QUESTIONS BY MR. MURDICA:</p> <p>23 Q. No, I just -- I'm helping -- I</p> <p>24 just want the record to reflect, you know,</p> <p>25 all of the reasons that you're dismissing</p>	<p style="text-align: right;">Page 209</p> <p>1 At the same time, I understand</p> <p>2 that for you that it might look like there is</p> <p>3 a before delivery and after delivery, but the</p> <p>4 prenatal baby is the same. So even if there</p> <p>5 was a contribution after delivery, it's still</p> <p>6 acetaminophen getting into the baby and</p> <p>7 causing the outcomes we are discussing.</p> <p>8 Q. Okay. So in Dr. Baccarelli's</p> <p>9 opinion, exposure postnatal can also cause</p> <p>10 autism?</p> <p>11 MR. SNIDOW: Objection to form.</p> <p>12 THE WITNESS: I didn't -- I</p> <p>13 didn't say that. I didn't do a</p> <p>14 Bradford Hill analysis on this. I</p> <p>15 didn't do a literature review of this.</p> <p>16 When I actually did my</p> <p>17 literature review, as you certainly</p> <p>18 read in my report, I excluded all</p> <p>19 those studies about postnatal exposure</p> <p>20 from my review. Therefore, I didn't</p> <p>21 look at that.</p> <p>22 I did look, though, at whether</p> <p>23 postnatal exposures are confounded,</p> <p>24 which means when we look at the</p> <p>25 association between prenatal exposure</p>

<p style="text-align: right;">Page 210</p> <p>1 and NDDs, is this real or maybe it's</p> <p>2 caused by postnatal exposure.</p> <p>3 It is not caused by postnatal</p> <p>4 exposure. It has been assessed in</p> <p>5 many studies, and postnatal exposure</p> <p>6 is not a problem.</p> <p>7 QUESTIONS BY MR. MURDICA:</p> <p>8 Q. Okay. Dr. Baccarelli, when you</p> <p>9 did the sensitivity analysis in Baker 2020</p> <p>10 and excluded the women who were administered</p> <p>11 Tylenol during labor and delivery, how did</p> <p>12 you choose which women to exclude?</p> <p>13 A. I'm -- I think -- I mean, can</p> <p>14 we look at the paper now? It would be</p> <p>15 important for me to --</p> <p>16 Q. You don't remember?</p> <p>17 A. I want to be sure 100 percent.</p> <p>18 But I can look at the paper here. If you</p> <p>19 want to give me the paper, I'll be happy to</p> <p>20 discuss this.</p> <p>21 Q. I really don't want to take the</p> <p>22 time to mark it right now because we're going</p> <p>23 to do that after lunch.</p> <p>24 I'll ask a different question</p> <p>25 if you can't remember.</p>	<p style="text-align: right;">Page 212</p> <p>1 really. No one ever said that.</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. Okay. You mean nobody ever</p> <p>4 said that about you, right?</p> <p>5 A. No. I mean that p-values</p> <p>6 should be abandoned. As you understand,</p> <p>7 confidence intervals and p-values are</p> <p>8 interrelated with each other, so the moment</p> <p>9 you present a confidence interval, you're</p> <p>10 also giving me information about the p-value.</p> <p>11 Q. Okay.</p> <p>12 A. So I think people have said</p> <p>13 that -- there are colleagues, typically</p> <p>14 clinicians, that rely -- over-rely on</p> <p>15 p-values. And there has been a movement in</p> <p>16 epidemiology to -- not to publish p-values</p> <p>17 because some people apparently are too eager</p> <p>18 to jump to conclusions only based on</p> <p>19 p-values.</p> <p>20 Q. Right.</p> <p>21 And in fact, the New England</p> <p>22 Journal of Medicine changed their standards</p> <p>23 on p-values for that reason, right?</p> <p>24 A. If you want to tell me what</p> <p>25 they did, let me know.</p>
<p style="text-align: right;">Page 211</p> <p>1 Let me ask you about your views</p> <p>2 on statistical significance.</p> <p>3 A. Uh-huh.</p> <p>4 Q. When you did your analysis</p> <p>5 here, did you focus on point estimates that</p> <p>6 were positive with statistically significant</p> <p>7 odds ratios?</p> <p>8 A. I focused on the entire</p> <p>9 literature. I focused on all the papers I</p> <p>10 reviewed, whether they're significant or not,</p> <p>11 whether they had a positive association or</p> <p>12 not, whether it was null, negative. So I</p> <p>13 reviewed everything.</p> <p>14 And I -- in my assessment I</p> <p>15 used both the point estimates and the</p> <p>16 statistical significance, as recommended by</p> <p>17 any epidemiology textbook.</p> <p>18 Q. Okay. But you are not part of</p> <p>19 a group of -- that thinks statistical</p> <p>20 significance should be abandoned or anything</p> <p>21 like that, right, Doctor?</p> <p>22 MR. SNIDOW: Objection to the</p> <p>23 form.</p> <p>24 THE WITNESS: I don't think</p> <p>25 anyone has ever said that. Not</p>	<p style="text-align: right;">Page 213</p> <p>1 Q. Okay. But it seemed like you</p> <p>2 were familiar with it, which is why I asked.</p> <p>3 A. There are 2,000 journals in the</p> <p>4 literature. What the New England Journal of</p> <p>5 Medicine does today, I really -- if you have</p> <p>6 an opinion on that that is important to the</p> <p>7 discussion today, please let me know.</p> <p>8 Q. What p-value -- what range of</p> <p>9 p-values are important to you, Doctor?</p> <p>10 A. All of them. The p-value is a</p> <p>11 number that goes from zero to 1. I want to</p> <p>12 look at all of it.</p> <p>13 Of course, I mean, there is an</p> <p>14 agreement in the general community that</p> <p>15 p-values that are less than 0.05 may evaluate</p> <p>16 one single study, makes a -- makes the study</p> <p>17 so-called statistically significant.</p> <p>18 Q. And if you have multiple</p> <p>19 endpoints you're looking at with p-values,</p> <p>20 then 0.05 may not be as meaningful, right?</p> <p>21 A. That depends on the type of</p> <p>22 study. It assumes the outcomes are not</p> <p>23 correlated to each other and the exposures</p> <p>24 aren't correlated with each other.</p> <p>25 (Baccarelli Exhibit 92 marked</p>

Page 214

1 for identification.)

2 QUESTIONS BY MR. MURDICA:

3 Q. Let's mark this.

4 Okay. Dr. Baccarelli, you now

5 have in front of you what's been marked as

6 Exhibit 92.

7 Do you recognize this?

8 A. No. I -- I'm sure it's

9 something I coauthored. I am -- okay.

10 Q. It has your name on it, right?

11 A. Yes.

12 Q. Is this the abstract you've

13 referred to a couple times regarding

14 meconium?

15 A. I don't know. Can I read it?

16 Q. Go ahead.

17 A. Oh, yes, this is the one. Very

18 nice.

19 Yeah.

20 Q. Are you ready?

21 A. Yep.

22 Q. Okay. So, Dr. Baccarelli,

23 Exhibit 92 --

24 A. Uh-huh.

25 Q. -- is the abstract you

Page 215

1 published looking at exposure during

2 pregnancy and what exposures look like in

3 meconium, right?

4 A. Correct.

5 Q. Okay. And what you found is

6 that acetaminophen administered during labor

7 showed a significant increase in the meconium

8 acetaminophen concentration, right?

9 A. Sorry, say that again?

10 Q. Acetaminophen administration

11 during labor was associated with a

12 significant increase in meconium

13 acetaminophen concentration, correct?

14 A. Correct. We found that, and we

15 found also an increase in -- during

16 pregnancy.

17 Q. My question was,

18 acetaminophen --

19 A. Yes, your question --

20 Q. Did you find a significant

21 increase in meconium acetaminophen

22 concentration from acetaminophen

23 administration during labor?

24 A. Yes, we did.

25 Q. Okay. And what was the p-value

Page 216

1 of that?

2 A. 0.002.

3 Q. Okay. So are you pretty

4 certain that that was a real finding?

5 A. Yeah. As expect, as I

6 mentioned before, I really -- it's clear, as

7 I said, that that can be reflected in

8 acetaminophen -- in the meconium.

9 Q. The administration during the

10 time of childbirth has a strong association

11 with the presence of meconium, correct?

12 A. Has an association, and you can

13 see the effect size is 2.30 to 2.15. It is

14 statistically significant, but I wouldn't say

15 strong. I mean, strong depends on compared

16 to what. The intensity of association is not

17 measured by the p-value.

18 Q. The p-value is less than .05,

19 correct?

20 A. 0.002.

21 Q. So much, much less than 0.05,

22 right?

23 A. Enough.

24 Q. Okay. And then acetaminophen

25 intake during pregnancy itself was marginally

Page 217

1 associated with meconium concentrations,

2 right?

3 A. And I can tell you why. That

4 analysis had a sample size of five. There

5 were only five women that in our database had

6 reported to have taken acetaminophen during

7 pregnancy. Because we never asked --

8 actually, the colleagues who worked on the

9 study -- I was not involved in the study back

10 then, but in -- when the study was started

11 15 years ago now, they just said one

12 question. They said, have you taken any

13 medications during pregnancy.

14 If you want to study

15 acetaminophen, you need to ask about

16 acetaminophen. You need to really say, have

17 you taken acetaminophen during pregnancy, and

18 they will say yes or no.

19 In this case, you -- we asked,

20 have you taken any medications. And you can

21 understand, that a sentence -- it's a type of

22 formulation that is not valid for

23 acetaminophen.

24 Because as I said,

25 acetaminophen is often over the counter, and

<p style="text-align: right;">Page 218</p> <p>1 women will not feel it's a, quote/unquote, 2 medication. 3 Q. And that -- 4 A. So this is why we never 5 published these results, because we realized 6 that the question is not valid. 7 So as far as I'm concerned -- 8 as I said before, this data didn't create any 9 alarm in my group because as you can see, the 10 level of acetaminophen goes up from 2.5 to 11 3.83. It's actually remarkable that with 12 only five women reporting acetaminophen, 13 it -- this 300 -- 238. So we would have 14 expected, I don't know, 120 to have used 15 acetaminophen, and only five actually -- they 16 might have said, okay, I took an 17 antihypertensive. I took -- I took drugs 18 that were prescribed by my physician. But 19 clearly it didn't occur to them and their -- 20 we might have liked them to tell us also 21 about Tylenol. 22 So this instrument, we talk 23 about validity of instrument. The question 24 we used for acetaminophen clearly was not 25 valid.</p>	<p style="text-align: right;">Page 220</p> <p>1 Q. There's a lot of parts in your 2 answer that I didn't ask for. 3 A. Okay. 4 Q. The 238 women are from the 5 GESTE cohort, correct? 6 A. Correct. 7 Q. Okay. And your testimony, 8 which is not reflected in the abstract, is 9 that there were only five women who were 10 administered acetaminophen out of those 238 11 who were not also given it at labor? 12 A. Absolutely not. I didn't say 13 that. 14 Q. Okay. 15 A. I actually said the opposite. 16 I said that only -- in this 17 questionnaire that asks in general, which 18 drugs did you take. So you understand, when 19 we ask about drugs, we give women usually a 20 list of drugs. 21 In this case we asked, which 22 medications are you taking, and women didn't 23 realize that acetaminophen -- in our 24 interpretation, women didn't realize that 25 acetaminophen is a medication. So they</p>
<p style="text-align: right;">Page 219</p> <p>1 So we only have five people. 2 So you can imagine, we have five women 3 reporting acetaminophen as being exposed, and 4 then you have in the unexposed 233. Probably 5 120 of those actually took acetaminophen but 6 didn't tell us. 7 So it's pretty remarkable, 8 actually. I have to say, it's pretty 9 remarkable with only five women we can see a 10 difference that is not of statistical 11 significance, but it's getting there. 12 So, I mean, again, I never 13 published these results, but I don't think 14 that they're valid. But at the same time, it 15 gave me the peace of mind that acetaminophen 16 really -- the meconium actually was. 17 Q. Are you done? 18 A. As always. 19 Q. Dr. Baccarelli, that answer 20 that you just gave applies to the entire 21 GESTE cohort, right? 22 A. No. The answer I just gave 23 applies to the -- these 238 women. 24 But what do you mean in 25 particular? Which part is --</p>	<p style="text-align: right;">Page 221</p> <p>1 didn't report in the overwhelming majority of 2 cases whether they reported acetaminophen -- 3 whether they were using acetaminophen. 4 So I have no reason to believe 5 that in GESTE the prevalence of use of 6 acetaminophen is different than the rest of 7 Canada, which is about 55, 60 percent. So 8 clearly there is a huge misclassification 9 here that would drive the results toward the 10 null. 11 So if any -- it's pretty 12 impressive, actually. It's almost a 13 50 percent increase in acetaminophen with 14 only five cases of women -- this actually is 15 certainly a false -- false negative. It 16 should be much higher, if I had all the data. 17 Q. Dr. Baccarelli, which of those 18 numbers reflects five women? 19 A. Is the micro -- it's the -- how 20 do you say, 2.51 to 3.83. The 3.83 are based 21 on five women. The 2.51 is based on all the 22 others, which is 233. 23 So let me get this from the 24 beginning. 25 The 2.51 is based on three --</p>

Page 222

1 283 women, and the 3.83 is based on five
 2 women. And again, in the 3.83, there are
 3 certainly 50 percent of them who did take
 4 acetaminophen but didn't tell us.
 5 So you can understand how we
 6 are comparing five women who take
 7 acetaminophen who thought it was important to
 8 take it. Perhaps even the women who took it
 9 longer. Perhaps they're reminded because
 10 they took it longer.
 11 But we're comparing them to a
 12 group of people that is mixed, where it's
 13 likely that 50 percent of the people in the
 14 251 group actually did take acetaminophen but
 15 didn't report it.
 16 Q. Dr. Baccarelli, the testimony
 17 that there were only five people in the 3.83
 18 group, that's -- you're doing that from
 19 memory, right? Because that's not reflected
 20 in Exhibit 92?
 21 A. I actually called Hannah the
 22 day before yesterday because I thought you
 23 would ask me about this, and I -- Hannah Laue
 24 is the person here, and I asked her what was
 25 the number of people and why we had this

Page 223

1 situation, and she confirmed that only five.
 2 I don't remember she told me
 3 how many there were in the other group.
 4 Probably not.
 5 Q. Okay. So it's your testimony
 6 here today that you called Dr. Laue a couple
 7 days ago to ask about how many -- the number
 8 of women that were accounted for in each of
 9 these numbers reported here?
 10 A. No, I called her in general
 11 to discuss whether there was any weakness in
 12 meconium, because she is the person who
 13 worked a lot on meconium.
 14 She says she didn't see any
 15 weakness. She didn't see any problem to be
 16 concerned.
 17 I really wanted to have a final
 18 discussion with her, and I told her, you
 19 know, I'm working on this litiga -- on this
 20 litigation -- sorry, it's not litigation --
 21 this case, and I wanted to really be sure
 22 that my understanding was similar to her.
 23 Because she definitely worked on meconium
 24 data much more than I did.
 25 And especially I wanted to be

Page 224

1 absolutely sure -- what the question I really
 2 had is that in reading Baker, it occurred to
 3 me that we did have data of -- on
 4 acetaminophen taken during -- at the time of
 5 delivery. So I thought, have we ever looked
 6 at that.
 7 So I called Hannah to say, have
 8 you ever looked at whether acetaminophen at
 9 time of delivery is associated with
 10 acetaminophen in meconium. And she pointed
 11 me to this abstract where there are these
 12 data that are not just about -- I was
 13 surprised, actually, that we had looked -- I
 14 didn't even remember we had data incomplete
 15 but on acetaminophen during pregnancy.
 16 And so she pointed out that we
 17 had done this analysis, and then I remembered
 18 that we decided not to publish because the
 19 question that helped us collect the data
 20 about pregnancy, about acetaminophen during
 21 pregnancy, was not considered a valid
 22 instrument.
 23 Q. Dr. Baccarelli, you published
 24 this abstract, right?
 25 A. Correct.

Page 225

1 Q. Okay. And the abstract
 2 reported in the plain language, it didn't --
 3 it doesn't contain anything that you just
 4 said. It reports that there's a significant
 5 increase of an association when Tylenol --
 6 when acetaminophen is administered during
 7 labor, correct?
 8 A. What -- sorry, can I -- I'm not
 9 sure I understand the question.
 10 Q. Okay. All of the
 11 qualifications that you just gave, everything
 12 you said critical of this analysis, is not
 13 present in the analysis itself, correct?
 14 A. It was present in the
 15 presentation that Hannah gave. It was a
 16 well-presented representation that Hannah
 17 gave at the conference.
 18 You understand that the
 19 abstracts for a conference are given to
 20 indicate the topic, and the type of -- and
 21 the type of presentation is going to give is
 22 supposed to be an overview.
 23 Q. Okay. You were there?
 24 A. I was there, yeah.
 25 Q. Okay. So you remember six

Page 226

1 years ago how she presented this abstract?

2 A. No, she shared candidly with me

3 the slide deck that she used.

4 Q. Okay. And do you have that?

5 A. Not here.

6 Q. Okay. We'll request that.

7 Okay. Do you agree, Doctor,

8 with the conclusion in the abstract that

9 delivery administration of acetaminophen is

10 well-represented in meconium?

11 A. Again, I agree that meconium

12 captures five months of pregnancy, including

13 that -- at the time of delivery, which,

14 anyhow, we have no reason to believe it

15 cannot be toxic to the fetus.

16 Q. Okay. So it's Dr. Baccarelli's

17 testimony that acetaminophen intake on the

18 day of delivery can cause autism in the

19 offspring, right?

20 MR. SNIDOW: Objection to form.

21 THE WITNESS: I didn't say

22 that. It's my opinion that

23 acetaminophen taken during pregnancy

24 is a cause associated with autism,

25 ADHD and other neurodevelopmental

Page 227

1 disorders.

2 I was not asked to -- I was not

3 asked to review the literature about

4 acetaminophen at delivery, so I

5 haven't done that.

6 QUESTIONS BY MR. MURDICA:

7 Q. Okay. So if I asked you right

8 now, can -- Dr. Baccarelli, can acetaminophen

9 taken during delivery induce autism, cause

10 autism, in the child, you would say you

11 hadn't done that analysis, correct?

12 A. Delivery is a part of

13 pregnancy, so if pregnancy as a whole -- as a

14 whole causes autism, it stand to reason that

15 also -- you might have a damaging effect also

16 if given at delivery.

17 But, again, yeah, I want to

18 point that in our analysis we exclude also

19 the women who took acetaminophen at delivery,

20 and the results were the same. So we don't

21 have a reason to think that acetaminophen

22 given at delivery is the only culprit here.

23 It might be one of the culprits, but we have

24 many culprits here, and certainly during

25 pregnancy is important.

Page 228

1 MR. SNIDOW: Okay. Jim, it's

2 12:30. Do you want to do lunch?

3 MR. MURDICA: Let me just

4 finish this question --

5 MR. SNIDOW: Go for it.

6 MR. MURDICA: -- because I

7 don't think I got an answer.

8 QUESTIONS BY MR. MURDICA:

9 Q. This is as to autism,

10 Dr. Baccarelli.

11 A. Okay.

12 Q. And so I actually have two more

13 questions because I'm going to ask it about

14 ADHD, too.

15 A. Okay.

16 Q. As to autism, according to

17 Dr. Baccarelli sitting here today in

18 August 2023, can acetaminophen taken by the

19 mother on the day of delivery cause autism in

20 the baby?

21 A. Again, I reviewed the pregnancy

22 as a whole, and as a whole, pregnancy is

23 associated with autism and ADHD, if you want

24 to hear that.

25 And I haven't looked at the day

Page 229

1 of delivery in isolation, so I can't answer

2 that. It might be biologically likely or it

3 might -- it's likely it's a problem, but I

4 don't have the -- I haven't looked -- I

5 haven't looked at the literature only by

6 filtering the results that tell about the day

7 of delivery.

8 Q. Okay.

9 MR. SNIDOW: You got both in

10 one.

11 MR. MURDICA: All right.

12 VIDEOGRAPHER: The time right

13 now is 12:31 p.m. We are off the

14 record.

15 (Off the record at 12:31 p.m.)

16 VIDEOGRAPHER: The time right

17 now is 1:08 p.m. We are back on the

18 record.

19 QUESTIONS BY MR. MURDICA:

20 Q. Dr. Baccarelli, welcome back

21 from lunch.

22 A. Thank you.

23 Q. Are you ready to proceed?

24 A. Absolutely.

25 Q. Dr. Baccarelli, prior to your

<p style="text-align: right;">Page 230</p> <p>1 work on this litigation, did you ever seek to 2 determine causes of autism in children?</p> <p>3 A. As you know, I worked 4 extensively in neurodevelopment, but I 5 haven't published on autism and causes of 6 autism in children.</p> <p>7 Q. Okay. Do you -- beyond your 8 opinion that acetaminophen exposure during 9 pregnancy can cause autism here, do you have 10 opinions on other causes of autism?</p> <p>11 A. There is -- there is plenty of 12 literature about potential and established 13 causes of autism, and that is in the 14 literature.</p> <p>15 Q. Okay. Sitting here today, what 16 established causes of autism do you 17 recognize?</p> <p>18 A. I mean, if we -- if you want me 19 to discuss that with same level that I am 20 talking about acetaminophen, there is very 21 little I can say with the same certainty 22 because I haven't done a Bradford Hill 23 analysis. I haven't done an extensive review 24 of the literature.</p> <p>25 So I'm ready to discuss them as</p>	<p style="text-align: right;">Page 232</p> <p>1 I've done here.</p> <p>2 Q. Correct.</p> <p>3 A. I've done -- I did informal 4 analysis of the same type. I mean, not with 5 the same level of detail and transparency, 6 but I did work on ADHD and published several 7 papers on ADHD and causes of ADHD. So in 8 that -- in that -- in those papers, there is 9 language about associations and potential 10 causation.</p> <p>11 Q. For example, a lack of 12 breastfeeding during early childhood is, 13 according to your work, a cause of ADHD, 14 correct?</p> <p>15 A. I didn't see that in my work. 16 You mean in my published work?</p> <p>17 Q. I thought so, but that's okay. 18 I'm just asking you. If the answer is no, 19 that's fine.</p> <p>20 A. I wouldn't -- sorry, I didn't 21 understand the question.</p> <p>22 Q. Okay. Sitting here today, 23 Dr. Baccarelli, do you believe that a lack of 24 breastfeeding the child causes ADHD in the 25 child?</p>
<p style="text-align: right;">Page 231</p> <p>1 they come along, but what I want to assure 2 you is that I assessed all the measure and 3 primary causes -- potential causes of autism 4 in addition to the literature between ADHD -- 5 sorry, acetaminophen and autism.</p> <p>6 So I was able to exclude that 7 the results for the association between 8 acetaminophen and autism may be biased by 9 other confounders, which may be risk 10 factor -- other risk factors of autism.</p> <p>11 VIDEOGRAPHER: I'm sorry, 12 Doctor, your microphone came off.</p> <p>13 THE WITNESS: Oh, so sorry.</p> <p>14 Sorry. Good catch. Thank you.</p> <p>15 QUESTIONS BY MR. MURDICA:</p> <p>16 Q. Dr. Baccarelli, I'm now going 17 to you ask the same question about ADHD.</p> <p>18 Prior to your determination 19 here that prenatal acetaminophen exposure can 20 cause ADHD in the child, had you done any 21 causation analyses on causes of ADHD in 22 children from exposures during pregnancy?</p> <p>23 A. I mean, I have -- and I have 24 the same answer. I worked -- I had worked on 25 ADHD -- and the question is before the work</p>	<p style="text-align: right;">Page 233</p> <p>1 A. I wouldn't be able to answer 2 this question. I mean --</p> <p>3 Q. Okay.</p> <p>4 A. -- I don't think there is 5 enough information I'm aware to answer this 6 question.</p> <p>7 It might have been one of the 8 risk factors that have been studied -- in 9 studies, but I -- it's not one of the typical 10 risk factors that are usually considered for 11 ADHD.</p> <p>12 Q. Okay. If I asked you the same 13 question for autism and the lack of 14 breastfeeding, would you give me the same 15 answer?</p> <p>16 A. Similar answer. There are -- 17 there might have been studies that looked at 18 lack of breastfeeding and autism.</p> <p>19 If you look at the major 20 authorities like the CDC or other 21 associations that deal with autism directly, 22 they would not put breastfeeding as one of 23 the risk factors that's typically shown to be 24 associated with ASD.</p> <p>25 Q. Okay. Dr. Baccarelli, do you</p>

<p style="text-align: right;">Page 234</p> <p>1 agree that untreated fever during pregnancy</p> <p>2 is a cause of autism in the child?</p> <p>3 A. Untreating fever during</p> <p>4 pregnancy has been -- are you asking about</p> <p>5 autism only or also ADHD?</p> <p>6 Q. Autism only.</p> <p>7 A. Untreated fever during</p> <p>8 pregnancy, pregnancy, correct, it has been</p> <p>9 associated with autism in many studies,</p> <p>10 including the ones -- some of the ones I</p> <p>11 reviewed.</p> <p>12 At the same time, the way I</p> <p>13 approached this question for my review was to</p> <p>14 understand whether there were differences</p> <p>15 between women who take Tylenol for any reason</p> <p>16 as opposed to women who take Tylenol because</p> <p>17 of fever.</p> <p>18 And, first of all, women who</p> <p>19 take Tylenol because of fever are only 8 to</p> <p>20 20 percent of the women, pregnant women, who</p> <p>21 take Tylenol. So fever is a smaller</p> <p>22 proportion.</p> <p>23 Most of the Tylenol during</p> <p>24 pregnancy is taken because of pain or</p> <p>25 headaches. And so the fever-reducing effect,</p>	<p style="text-align: right;">Page 236</p> <p>1 that. I didn't do a formal analysis, so I</p> <p>2 can't tell you with the same certainty as</p> <p>3 for acetaminophen and ASD whether there is</p> <p>4 the same level of certainty. But, yes, there</p> <p>5 is -- there are plenty of associations that</p> <p>6 prompted me to consider fever as a potential</p> <p>7 confounder.</p> <p>8 Q. Okay. I'm still not sure that</p> <p>9 you answered.</p> <p>10 Are you agreeing with me or</p> <p>11 disagreeing with me that fever, untreated,</p> <p>12 during a pregnancy in a woman can be a cause</p> <p>13 of autism in the child?</p> <p>14 A. So --</p> <p>15 MR. SNIDOW: Objection to the</p> <p>16 form.</p> <p>17 THE WITNESS: So fever is one</p> <p>18 of -- is -- has been suggested to be a</p> <p>19 cause, and I can agree with that.</p> <p>20 At the same time, it is not --</p> <p>21 QUESTIONS BY MR. MURDICA:</p> <p>22 Q. Can or cannot?</p> <p>23 A. I can agree with that.</p> <p>24 At the same time, it's not a</p> <p>25 confounder, so it's not the reason why we see</p>
<p style="text-align: right;">Page 235</p> <p>1 the fever-reducing indication, happens only</p> <p>2 in a small amount of women.</p> <p>3 There are a lot of studies that</p> <p>4 have looked at whether the effect of Tylenol</p> <p>5 changes according to whether it's been</p> <p>6 reported to be because of fever or not, and</p> <p>7 there is not a lot of changes because of</p> <p>8 that.</p> <p>9 So the -- we are -- based on my</p> <p>10 review, I concluded that there is no evidence</p> <p>11 that fever is confounding the association</p> <p>12 between Tylenol during pregnancy and ASD in</p> <p>13 the children.</p> <p>14 Q. Do you remember my question,</p> <p>15 Dr. Baccarelli?</p> <p>16 A. Yes.</p> <p>17 MR. SNIDOW: Objection.</p> <p>18 THE WITNESS: I did answer.</p> <p>19 QUESTIONS BY MR. MURDICA:</p> <p>20 Q. Okay. I'll ask it again.</p> <p>21 Dr. Baccarelli, do you agree</p> <p>22 that untreated fever during pregnancy is a</p> <p>23 cause of autism in the child?</p> <p>24 A. Again, there are -- there</p> <p>25 are -- there are several studies that show</p>	<p style="text-align: right;">Page 237</p> <p>1 the associations between acetaminophen and</p> <p>2 ASD or acetaminophen and ADHD in the</p> <p>3 literature.</p> <p>4 Q. So are you also agreeing then,</p> <p>5 Dr. Baccarelli, that untreated fever during</p> <p>6 pregnancy can cause ADHD in the child?</p> <p>7 A. Again, we have -- there is</p> <p>8 evidence that that is true. At the same</p> <p>9 time, I repeat that I've looked at the</p> <p>10 literature, and while it may be a cause, it's</p> <p>11 not a confounder. So the association between</p> <p>12 acetaminophen and ADHD is not due to fever.</p> <p>13 Women who have fever and take</p> <p>14 acetaminophen have a problem. Women who</p> <p>15 don't have fever and don't take</p> <p>16 acetaminophen -- take acetaminophen have a</p> <p>17 problem as well.</p> <p>18 Q. Dr. Baccarelli, because we only</p> <p>19 have a limited amount of time, I would like</p> <p>20 you to say on the record whether you think</p> <p>21 that I asked you about acetaminophen in this</p> <p>22 last series of four questions about untreated</p> <p>23 fever.</p> <p>24 Did I ask you about</p> <p>25 acetaminophen?</p>

Page 238

1 MR. SNIDOW: Objection to the
2 form.
3 THE WITNESS: I -- we are
4 talking about acetaminophen, so I made
5 sure I wanted to make clear why I
6 reviewed the literature.
7 MR. MURDICA: Put this one
8 down.
9 MR. SNIDOW: Just object to
10 form on that, too.
11 MR. MURDICA: Well, per your
12 suggestion, we're making a list of
13 things in the event that we have to go
14 to the Court on this because this --
15 that was absurd.
16 MR. SNIDOW: Objection to the
17 form.
18 MR. MURDICA: Okay.
19 MR. SNIDOW: We don't need the
20 commentary.
21 QUESTIONS BY MR. MURDICA:
22 Q. Okay. Dr. Baccarelli, what
23 else can cause autism according to
24 Dr. Baccarelli?
25 A. You know, there are -- I can

Page 239

1 tell you what I wrote in my report. There
2 are a few things that can cause autism.
3 Particularly if you look, for instance, at
4 the CDC for autism reports, older parents and
5 OB/GYN complication at birth. And there is
6 some indication that genetics contributes to
7 autism. And I wouldn't say cause, because
8 cause is a loaded question. And genetics
9 cause almost nothing. It contributes to a
10 lot of disease.
11 Q. There are -- you're aware of
12 genetic syndromes, right, Doctor?
13 A. Absolutely.
14 Q. And genetic syndromes are
15 caused by a particular gene, correct?
16 A. If -- I wanted -- I made that
17 point exactly, because let's say genetic
18 syndrome for autism. There is a -- they're
19 all called by different mutations. The most
20 common is p10.
21 p10 -- out of 100 people with
22 p10, only 20 get autism. So there is an
23 increased risk if you have a p10, but it's
24 not a one-on-one correspondence. So you
25 understand that I cannot say that p10 is the

Page 240

1 only cause of autism in this case.
2 In the kids who have p10 and
3 they have autism, it's entirely likely that
4 the reason are the environmental factor that
5 intervenes. Because, again, out of five kids
6 with p10, only one gets autism. Four do not.
7 Q. Dr. Baccarelli, is maternal
8 stress associated with autism in the
9 offspring?
10 A. I don't think there is a
11 consensus about that.
12 Q. Okay. Have you looked?
13 A. Yes, I did.
14 Q. Okay. Have you seen evidence
15 that it is -- that maternal stress is
16 associated with autism in the offspring?
17 A. I didn't -- I didn't do a
18 formal analysis. So there are papers that
19 might have reported that, but whether stress
20 is associated with autism in the -- in the
21 child, I don't think there is conclusive
22 evidence.
23 So at the same time, I did
24 worry about stress. I did worry about
25 anxiety. I did worry about neuroticism. And

Page 241

1 I can say with absolute certainty that it's
2 more reasonable than not that these have
3 nothing to do in association with prenatal
4 acetaminophen and the ADHD and ASD.
5 Q. Dr. Baccarelli, if I asked you
6 the same question about maternal stress in
7 relation to ADHD, would you give me the same
8 answer?
9 A. Uh-huh.
10 Q. Okay. Dr. Baccarelli, do you
11 believe that maternal depression is
12 associated with the outcome of autism?
13 A. Again, I haven't looked at
14 maternal depression in general. There is a
15 lot of literature about maternal depression.
16 There's a lot of literature about
17 antidepressant, including valproic acid and
18 ASD.
19 If you look at the measured
20 reference sources like the CDC website, it
21 wouldn't list depression or even an
22 antidepressant in that list. So, again, I
23 think it's an interesting hypothesis that I
24 haven't reviewed in detail.
25 I did, though, look at the --

Page 242

1 at whether antidepressant -- antidepressant
 2 or depression might influence or bias the
 3 association between acetaminophen prenatally
 4 and the ASD in the child, and that is not the
 5 case.
 6 Q. Okay. So, Dr. Baccarelli, your
 7 testimony is that taking antidepressants
 8 doesn't cause autism, correct?
 9 A. No, I didn't say that.
 10 I said that there are
 11 antidepressant that have been associated with
 12 autism and that, of course, as -- of course
 13 there is a lot of literature, and I haven't
 14 reviewed the same detail as here.
 15 So what I said is that I
 16 took -- I did my research and did the
 17 worst-case scenario that antidepressants and
 18 depression caused the autism. So for the
 19 job -- for the work I did today, I started
 20 from the worst-case scenario, the idea that
 21 that is true, as you say. But I didn't worry
 22 about doing a formal analysis to verify
 23 whether it is true or not.
 24 I just started from the
 25 worst-case scenario and worked back and make

Page 243

1 sure that there was no evidence that the
 2 results that we're discussing today between
 3 acetaminophen and ASD or acetaminophen and
 4 ADHD are biased in any way by mental health
 5 in the mother, especially depression, and use
 6 of antidepressant -- antidepressives.
 7 Q. Okay. And you satisfied
 8 yourself of that by considering studies that
 9 controlled for those factors?
 10 MR. SNIDOW: Objection to form.
 11 THE WITNESS: Not only. I
 12 considered plenty of evidence from
 13 different levels. I consider studies
 14 that controlled for these factors. I
 15 consider negative control exposures
 16 that are interesting because they add
 17 additional evidence to that, as I
 18 wrote in my report.
 19 QUESTIONS BY MR. MURDICA:
 20 Q. Did the negative control
 21 exposures look at maternal depression?
 22 A. The negative control exposures
 23 don't need to look at maternal depression.
 24 They exclude any confounder based on the
 25 negative control exposure. So there is

Page 244

1 not -- that is not the way control exposures
 2 work.
 3 There is results of
 4 sibling-control study that shows association
 5 that is also very powerful, because
 6 sibling-control studies are very likely to be
 7 false negatives for the way that the siblings
 8 are chosen, because they're too similar to
 9 the other sibling.
 10 So if you have a
 11 sibling-control study that shows an
 12 association, that is particularly powerful.
 13 Q. Okay. Dr. Baccarelli, do you
 14 know from your own work or from your study if
 15 a woman, when pregnant, changes her behavior
 16 as to taking or not taking medication?
 17 MR. SNIDOW: Object to form.
 18 THE WITNESS: They might. I
 19 have no doubt that there are changes
 20 in behavior.
 21 QUESTIONS BY MR. MURDICA:
 22 Q. In other words, when a woman
 23 becomes pregnant, she might be less likely to
 24 take medication because she's worried about
 25 the baby, right?

Page 245

1 MR. SNIDOW: Object to form.
 2 THE WITNESS: That is a
 3 hypothesis that might be true.
 4 QUESTIONS BY MR. MURDICA:
 5 Q. Okay. And once she gives
 6 birth, she might be more likely to take
 7 medication than when she was pregnant,
 8 correct?
 9 MR. SNIDOW: Object to form.
 10 THE WITNESS: Perhaps.
 11 QUESTIONS BY MR. MURDICA:
 12 Q. Okay. I want to go back to --
 13 we were talking about the Laue article -- or
 14 Laue.
 15 How do you say Hannah's last
 16 name?
 17 A. Laue. I wish I could say
 18 right. Let's say Laue.
 19 Q. Laue. The Laue article,
 20 Exhibit 90.
 21 And before it was published,
 22 you reviewed and revised it, right?
 23 A. Uh-huh.
 24 (Baccarelli Exhibit 93 marked
 25 for identification.)

Page 246

1 QUESTIONS BY MR. MURDICA:

2 Q. And we're going to mark your

3 revisions as Exhibit 93.

4 A. Okay.

5 Q. Okay. Dr. Baccarelli, you now

6 you have in front of you what's been marked

7 as Exhibit 93.

8 Do you recognize that?

9 A. Yeah, it seems to be one of our

10 papers.

11 Q. Okay. And does it appear to be

12 a draft of the Laue article?

13 A. I don't know. The title is

14 different.

15 Q. Okay.

16 A. Let me check.

17 Yes, it's meconium, yes. It

18 seems to be the same.

19 Q. Okay. And do you know if this

20 was revised before or after getting rejected

21 by the gynecol -- gynecology oncology --

22 A. I wouldn't know.

23 Q. Obstetrics and gynecology

24 journal?

25 A. I wouldn't know.

Page 247

1 Q. Okay. And if you look, this is

2 a redline, right? Is it a redline format?

3 A. Yeah.

4 Q. Okay. And do you see the

5 comments in the margin, BA?

6 A. Yes, I can see that.

7 Q. That's you, right?

8 A. Probably, yes. I think so.

9 Q. Okay. So if you look at what's

10 marked page 301 at the bottom --

11 A. Uh-huh.

12 Q. -- do you see your comment

13 there?

14 A. Yeah. Very consistent from

15 what I said before, I believe.

16 Q. Your comment is you're asking

17 if meconium exposure represents the third or

18 second trimester, right?

19 A. I am arguing here that -- as

20 you say, she said our study captured third

21 trimester exposure, and I thought that was

22 not completely accurate because it captures

23 both second and third.

24 So my question goes to the

25 direction of saying, please either specify it

Page 248

1 captures third, because meconium captures

2 second or third, or just say it captures

3 both.

4 I felt this statement as

5 written by -- in the draft I received was not

6 completely accurate.

7 Q. And the next sentence says,

8 "While meconium captures a wide window of

9 exposure, it's not possible to determine

10 precisely when during that window a fetus was

11 exposed to the tested substance."

12 Right?

13 A. That is correct. As I

14 mentioned before, it gives us a cumulative

15 dose over the five months or the six months.

16 We cannot understand exactly which are

17 the days during the six months that are --

18 that are important.

19 Now, at the same time, this

20 shows the cumulative dose. So it shows the

21 dose over the entire six months. This is

22 what matters here.

23 Again, this paper, not the

24 study, was done to address the question

25 you mentioned, whether -- when women took

Page 249

1 Tylenol.

2 We're interested that women

3 took Tylenol over the six months window.

4 Tylenol gets trapped into the meconium.

5 Meconium is associated with -- well,

6 actually, in this case not associated with

7 anything. In the other case, 2020 Baker,

8 associated with the ADHD.

9 Q. And, Dr. Baccarelli, if you

10 disagreed with the words I just read, you

11 would have let Hannah know in the redline,

12 right?

13 A. Say that again. Sorry.

14 Q. If you disagreed with the words

15 I just read about meconium, you would have

16 let her know?

17 A. So this says exactly what I

18 said, which I agree with, which is, meconium

19 is an integrate of six months worth of

20 exposure only one time. Meconium gives only

21 one number.

22 So if the level of exposure is

23 200, it's 200 over those six months. Does it

24 make sense?

25 So I don't have -- as you can

Page 250

1 understand very well, I don't get six numbers
 2 that reflect each six months of exposure. I
 3 get only one number. We get to measure
 4 meconium only once, so the number we get is
 5 only one. So it's the cumulative dose of
 6 exposure during pregnancy.
 7 And I think it's clear in this
 8 context that what we meant is that the data
 9 gives us information only about the
 10 cumulative dose over six months. The data
 11 don't give information about which month the
 12 exposure happened.
 13 Q. And if you turn to page 299 of
 14 this --
 15 A. Uh-huh.
 16 Q. -- you corrected Dr. Laue to
 17 say that if there's not an association, it
 18 doesn't matter if -- the concentration
 19 doesn't matter, right?
 20 A. Let me read this.
 21 Q. Okay.
 22 A. So say the question again?
 23 Q. Here you corrected Dr. Laue and
 24 said that there's no -- if there's no
 25 association, it doesn't matter whether the

Page 251

1 concentration is up or down.
 2 A. No, I didn't say that.
 3 Q. Okay. What did you say,
 4 Doctor?
 5 A. I said -- I said that if there
 6 is no association, we cannot -- the language
 7 is not appropriate. We should say there is
 8 no association. We shouldn't start with a
 9 priori.
 10 I think what Dr. Laue implies,
 11 that increased Tylenol is bad, and that's
 12 something I don't want to have as a priori.
 13 A priori I want to say increased Tylenol is
 14 maybe better or not.
 15 So I wanted to be objective. I
 16 wanted her to write something objectively. I
 17 didn't want her to be biased to expect a
 18 certain result.
 19 So as a teacher and a mentor, I
 20 want them to learn to be objective and
 21 non-biased. So this was my training to her,
 22 to always think than expected. Never to
 23 start with a hypothesis and try to prove it,
 24 but always start with an open slate and be
 25 open to the data to tell you what is true.

Page 252

1 Q. Dr. Baccarelli, wasn't she
 2 trying to say that even increasing
 3 concentrations in the meconium had no
 4 association with the outcome measure?
 5 MR. SNIDOW: Objection to the
 6 form.
 7 THE WITNESS: So if you -- as I
 8 wrote in my report, this paper -- and
 9 it discusses in length. This paper in
 10 particular, which is Laue 20 -- what
 11 is this, Laue 2019?
 12 As you show in the result, they
 13 show in the published paper, you then
 14 need to use the preliminary draft.
 15 I published a study that shows
 16 no association. It's a study that did
 17 a critique in my report, and it's not
 18 prior. It's one of the very few
 19 studies that shows no association.
 20 So this is shown in my tables.
 21 It's shown in my results. I
 22 considered it in my analysis. It's a
 23 point I completely carve out in my
 24 report.
 25

Page 253

1 QUESTIONS BY MR. MURDICA:
 2 Q. Okay. Exhibit 90 you were
 3 holding, right?
 4 A. Yes.
 5 Q. That's the actual publication.
 6 You're the last listed author
 7 on it, right?
 8 A. Yeah.
 9 Q. Okay. The last sentence under
 10 abstract says, "These results do not support
 11 prior reports of adverse neurodevelopmental
 12 effects in utero exposure to acetaminophen."
 13 Correct?
 14 A. That is correct. This paper
 15 shows no association between acetaminophen
 16 and intelligence, so the results of this
 17 paper are not consistent with the
 18 explanation. But we are talking about one
 19 paper, not the overall evidence.
 20 Q. Right.
 21 We're talking about one paper
 22 that you did in 2019, right?
 23 A. Correct. One paper that I did
 24 that I realize is one of the few papers --
 25 and this really also shows that I have no

Page 254

1 stakes here. I published one paper that is
 2 negative, one paper that is positive.
 3 I'm happy to say that this
 4 paper doesn't contribute a lot of evidence,
 5 but taken together with all the other papers,
 6 I'm -- there is no problem to think that
 7 this paper doesn't contribute to the
 8 evidence, but the overall evidence is
 9 incredibly strong.
 10 You have 45 papers. I believe
 11 35 show something that this paper does not
 12 show. So this is consistent as it gets in
 13 epidemiology. There is no example that I've
 14 worked on where the evidence is so
 15 consistent.
 16 Q. Dr. Baccarelli, in your 2020
 17 paper, did you criticize the Laue paper?
 18 A. I cannot remember. I'm happy
 19 to look at the 2020 and see whether -- I
 20 thought we did, but if we didn't, our bad.
 21 But I thought we mentioned the paper.
 22 Q. Do you know, sitting here
 23 today, if you criticized Exhibit 90, the 2019
 24 paper, before you were paid for your opinions
 25 here?

Page 255

1 MR. SNIDOW: Hold on.
 2 Objection to form.
 3 THE WITNESS: I would like to
 4 see the paper and see whether I -- I
 5 was pretty confident that we did, but,
 6 I mean, I can't remember whether we
 7 did and what we said.
 8 QUESTIONS BY MR. MURDICA:
 9 Q. Okay. Turn to -- on
 10 Exhibit 90, if you turn to page -- it's 140
 11 at the top. It's the third page in.
 12 A. Uh-huh.
 13 Q. Under Discussion, bottom right,
 14 it's the second to last sentence. It says,
 15 "In this population, subjects whose mothers
 16 had recorded administration of acetaminophen
 17 at delivery had significantly higher
 18 concentrations of acetaminophen in their
 19 meconium. Data not shown."
 20 A. Uh-huh.
 21 Q. Okay.
 22 MR. SNIDOW: So sorry, Jim.
 23 Where are you?
 24 THE WITNESS: At the end here.
 25 MR. SNIDOW: Okay. Thank you.

Page 256

1 QUESTIONS BY MR. MURDICA:
 2 Q. Doctor, that was true, right?
 3 A. We discussed that before, is
 4 the abstract we discussed, that there was an
 5 association between taking acetaminophen at
 6 delivery and acetaminophen in meconium.
 7 As you saw, there was also an
 8 association between taking acetaminophen
 9 during pregnancy, before delivery, before the
 10 time of delivery, before being admitted to
 11 the hospital for delivery, and levels of
 12 acetaminophen in meconium.
 13 There were -- and as we
 14 discussed, the data were not complete for the
 15 second part, for acetaminophen during
 16 pregnancy.
 17 So -- but really, this doesn't
 18 in any way says that meconium captures only
 19 delivery.
 20 In fact, as I mentioned, we did
 21 sensitivity analysis in Baker 2020, which is
 22 the only one that is positive -- this is
 23 not -- where we excluded those women that you
 24 mentioned here, and the results did not
 25 change whatsoever.

Page 257

1 So because they did not change
 2 whatsoever, it really means this association
 3 is not influential. It's not influencing the
 4 association between acetaminophen and ADHD.
 5 Q. And those women that you --
 6 when you did that sensitivity analysis, you
 7 were able to exclude them because there was a
 8 hospital administration record that they were
 9 given acetaminophen at delivery, correct?
 10 A. I think that is correct.
 11 Q. Right.
 12 And you know, do you not,
 13 Dr. Baccarelli, that those records oftentimes
 14 omit hospital administration during labor and
 15 delivery --
 16 MR. SNIDOW: Object to form.
 17 QUESTIONS BY MR. MURDICA:
 18 Q. -- right?
 19 A. Say that again?
 20 Q. The hospital administration
 21 records for the GESTE cohort often omit
 22 whether a mother had acetaminophen during
 23 labor and delivery.
 24 A. That is something we reviewed
 25 in -- we had a detailed discussion with this

<p style="text-align: right;">Page 258</p> <p>1 with the colleagues in OB/GYN and in the 2 delivery ward there and with Hannah and 3 Larissa Takser, and we realized there are two 4 sources of records that are kept in 5 Sherbrooke. 6 The delivery charts -- the 7 delivery charts is the information that -- 8 there is a questionnaire. When women come in 9 and they're rushing to the hospital, there is 10 someone there, a nurse or a doctor, that 11 tries to ask people what they took before 12 they came into the hospital. So the delivery 13 charts are the ones -- one source of 14 information, which is the source we did not 15 use. 16 However, any drug given to a 17 woman in labor is recorded in the clinical 18 chart, and the clinical chart is accurate. 19 The delivery chart is not. The clinical 20 chart is accurate. 21 So we didn't use the delivery 22 chart, which again is a type of -- I saw it 23 in -- when I went to Sherbrooke, I saw the -- 24 I saw both the clinical charts and the 25 delivery chart. The delivery chart is a</p>	<p style="text-align: right;">Page 260</p> <p>1 Q. Okay. Dr. Baccarelli, when did 2 you realize that despite -- that the delivery 3 charts were inaccurate but there was another 4 source that was accurate, according to you? 5 A. I can't remember, but it might 6 have been before this paper. 7 Q. All right. Because 8 you actually told Dr. Laue that the delivery 9 charts were unreliable, they didn't include 10 labor or delivery administration of 11 acetaminophen, and a maternal report would be 12 more reliable, correct? 13 A. I didn't say that. This was 14 done by -- Dr. Laue spoke directly with the 15 colleagues in Canada. 16 Q. Okay. And did you agree with 17 that, that the delivery chart was missing 18 data? 19 A. Yeah. And we didn't use it. 20 Q. Okay. If you -- we're back on 21 Exhibit 90, going through the Laue article, 22 on page 142. 23 A. Uh-huh. 24 Q. If you look at this section, 25 I'm going to ask you about this sentence, but</p>
<p style="text-align: right;">Page 259</p> <p>1 questionnaire. It's two pages. And women 2 are asked while in labor, or while getting 3 prepped for anesthesia if they're doing a 4 C-section, to ask {sic} this question. 5 You can understand how they 6 might answer. They might answer any -- I 7 mean, have you taken any drugs: Yes; no; I 8 don't know. 9 But then what we used is not 10 that data. What we used is the drugs 11 recorded given by the nurse or by the 12 physicians, and those are registered. Any 13 drug that is given to anyone in a hospital is 14 recorded. 15 So there is a source of 16 information that we had in Sherbrooke that 17 wasn't reliable. That's the delivery chart 18 that we didn't use. 19 We did use the clinical charts, 20 which is the drugs that are prescribed and 21 administered by the nurse and the physician. 22 Q. And -- okay. Are you done? 23 A. Say that again? 24 Q. Are you done with your answer? 25 A. Yeah.</p>	<p style="text-align: right;">Page 261</p> <p>1 there's a couple sentences before it. 2 What's published here by you 3 and Dr. Laue says, "Importantly, many of the 4 instruments previously used relied on 5 parental report of behavior, which may be 6 inaccurate or biased." 7 Do you see that? 8 A. Where is it? 9 MR. SNIDOW: Where are you? 10 MR. MURDICA: Probably the 11 second sentence on the page. 12 MR. SNIDOW: Thanks. 13 Do you mind reading it again 14 for him? 15 QUESTIONS BY MR. MURDICA: 16 Q. Sure. 17 "Importantly, many of the 18 instruments previously use relied on parental 19 report of behavior, which may be inaccurate 20 or biased." 21 THE WITNESS: What is it again? 22 What is that? 23 MR. SNIDOW: Do you mind? 24 MR. MURDICA: No. 25 MR. SNIDOW: Okay. Thank you.</p>

<p style="text-align: right;">Page 262</p> <p>1 THE WITNESS: Thank you.</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. Okay. That was -- first of</p> <p>4 all, you signed off on those words, right?</p> <p>5 A. I did.</p> <p>6 Q. Okay.</p> <p>7 A. But at the same time, I mean, I</p> <p>8 want to point out that, A, if they're</p> <p>9 inaccurate, they probably take away the</p> <p>10 signal, so they're going to create false</p> <p>11 negatives, which is not what we see now.</p> <p>12 So if this -- if this -- let's</p> <p>13 say that I was -- I was here to say that</p> <p>14 there is no association between ADHD -- we're</p> <p>15 talking about ADHD, I think, here -- and</p> <p>16 acetaminophen or ASD and acetaminophen. This</p> <p>17 would be a big concern because this is likely</p> <p>18 to make the association go away.</p> <p>19 I have to say, as worded, this</p> <p>20 seems to be a strong statement, and I wish I</p> <p>21 had attenuated because when you look at</p> <p>22 thousands of people like studies have done,</p> <p>23 if you do this in 50,000 people, that's</p> <p>24 incredibly important information.</p> <p>25 There is misclassification, but</p>	<p style="text-align: right;">Page 264</p> <p>1 statement on 142, but I'm suggesting politely</p> <p>2 that you look back into that entire paragraph</p> <p>3 and then see if you can answer my question.</p> <p>4 MR. SNIDOW: Okay. Objection.</p> <p>5 MR. MURDICA: I'll ask it again</p> <p>6 if you'd like me to.</p> <p>7 MR. SNIDOW: Yeah, please. I</p> <p>8 apologize.</p> <p>9 MR. MURDICA: I was trying to</p> <p>10 help the doctor.</p> <p>11 MR. SNIDOW: I know. I get it.</p> <p>12 Just an objection.</p> <p>13 THE WITNESS: I just want to</p> <p>14 point out that this paper is about</p> <p>15 intelligence. It's not about ASD and</p> <p>16 ADHD. So we're talking about</p> <p>17 intelligence here. And in general,</p> <p>18 the discussion is about intelligence.</p> <p>19 QUESTIONS BY MR. MURDICA:</p> <p>20 Q. Doctor, please turn to</p> <p>21 page 141 --</p> <p>22 A. Uh-huh.</p> <p>23 Q. -- left side.</p> <p>24 A. Uh-huh.</p> <p>25 Q. Tell me if I read this</p>
<p style="text-align: right;">Page 263</p> <p>1 as I said in my report, the misclassification</p> <p>2 is expected to be nondifferential. That</p> <p>3 means it's going to make any association, any</p> <p>4 link, between acetaminophen and ASD or</p> <p>5 acetaminophen and ADHD go away, not make it</p> <p>6 appear.</p> <p>7 So if you're looking for</p> <p>8 reasons why the association exists, as shown</p> <p>9 in the literature, this is not it.</p> <p>10 Q. Okay. Doctor, do you</p> <p>11 disagree -- and I want you to go ahead and</p> <p>12 read the three sentences before this on the</p> <p>13 prior page.</p> <p>14 Do you disagree that what you</p> <p>15 were saying here was that the other studies</p> <p>16 might be biased, which is why they didn't</p> <p>17 come to the conclusion that there was no</p> <p>18 association with neurodevelopmental</p> <p>19 disorders?</p> <p>20 MR. SNIDOW: On 141?</p> <p>21 MR. MURDICA: Yes.</p> <p>22 THE WITNESS: 141? What is it?</p> <p>23 What --</p> <p>24 QUESTIONS BY MR. MURDICA:</p> <p>25 Q. I'm still asking you about the</p>	<p style="text-align: right;">Page 265</p> <p>1 correctly.</p> <p>2 "Although the results of this</p> <p>3 study seem discordant with previous studies,</p> <p>4 Avella-Garcia, Brandlistuen, Liew,</p> <p>5 Stergiakouli, Thompson, Vlenterie, Ystrom,</p> <p>6 they are not necessarily in conflict. In</p> <p>7 addition to the improved exposure assessment</p> <p>8 in our study, previous studies have primarily</p> <p>9 used instruments that measured child</p> <p>10 behavior, motor development, and symptoms of</p> <p>11 specific behavioral disorders including ADHD</p> <p>12 and autism. This study subjects {sic} from</p> <p>13 the WISC-IV battery, which is an objective,</p> <p>14 validated metric that is commonly used to</p> <p>15 measure components of child intelligence,</p> <p>16 because behavior and intelligence are</p> <p>17 different, our results cannot be directly</p> <p>18 compared. Importantly, many of the</p> <p>19 instruments previously used relied on</p> <p>20 parental report of behavior, which may be</p> <p>21 inaccurate or biased."</p> <p>22 Did I read that correctly?</p> <p>23 A. You read that correctly.</p> <p>24 Q. Do you stand by those words?</p> <p>25 A. I think -- no. I told you in</p>

Page 266

1 the beginning that I had different opinion in
2 2019 --
3 Q. Okay.
4 A. -- than I have today.
5 Q. Okay.
6 A. And the reason why is that, I
7 was really sure that acetaminophen was fine
8 and our results were in line with that. I
9 was probably overinfluenced by my opinions,
10 and I'm sorry I did.
11 At the same time I want to
12 point out, A, that the reason why they're
13 different is because we said -- we said a
14 completely different thing. We said we had
15 one advantage. We are measuring meconium.
16 Others haven't done it.
17 The other thing is that the
18 previous studies looked at ADHD -- methods
19 related to ASD and ADHD. We are looking only
20 at intelligence, so we are capturing only one
21 component.
22 And I think you understand that
23 ADHD, kids with ADHD, they don't have lower
24 intelligence usually. And children with ASD
25 might even have higher -- with ASD can have

Page 267

1 higher intelligence.
2 So what this statement needs to
3 be read is that we are studying intelligence;
4 we're not studying ADHD or ASD. So at the
5 time I wrote this, I believe that part of the
6 reason was that we are -- we are studying
7 different type of phenotypes, different type
8 of diseases; that intelligence might not be a
9 target of Tylenol over acetaminophen while
10 the ADHD and ASD might have been.
11 I have to say today, probably I
12 was wrong also on the statement that is
13 written here. The statement as written here
14 is, there is not -- we found no effect on
15 intelligence, and most like -- we found no
16 effect on intelligence, and most likely --
17 and most likely we are right.
18 We were not right. What I
19 wrote here, I mean, after three years, I need
20 to take it back.
21 Q. Okay. Dr. Baccarelli, if you
22 look back on page 142 -- are you on 142?
23 A. Yep.
24 Q. Okay. At the very -- the last
25 sentence of the second paragraph there, it

Page 268

1 says, "Because of inconsistent
2 epidemiological findings and without an
3 identified mechanism, causality of any
4 association observed in the other studies
5 cannot be established."
6 Do you see that?
7 Are you looking at the exhibit?
8 A. Let me look, yeah.
9 Q. We were on page 142.
10 Are you on page 142, Doctor? I
11 don't think you are.
12 MR. SNIDOW: Jim, do you mind
13 if I --
14 MR. MURDICA: Nope.
15 MR. SNIDOW: Okay. Thanks.
16 THE WITNESS: Thank you.
17 MR. SNIDOW: Yeah.
18 THE WITNESS: Thank you.
19 QUESTIONS BY MR. MURDICA:
20 Q. Okay. Did you see that?
21 A. Yes.
22 Q. Okay. And you signed off on
23 that before it was published, right?
24 A. Yes.
25 Q. Okay. And I take it you don't

Page 269

1 stand by that now?
2 A. I stand by the final sentence,
3 which I understand that usually at the end of
4 the -- of a manuscript we write the final
5 sentence that encompasses all the paper. So
6 you are picking out -- you are really
7 cherry-picking on one sentence.
8 Q. Well, they're your words,
9 right?
10 A. The entire paper says, although
11 our study provides some reassurance, its
12 observational nature cannot definitely
13 determine, one study only, that women can
14 safely consume acetaminophen during
15 pregnancy, and ongoing surveillance and
16 long-term outcomes of fetal exposure remains
17 warranted.
18 So we didn't say acetaminophen
19 is no problem. We didn't say everything that
20 was published should be discarded. We just
21 said our study does not support an
22 association.
23 And unfortunately, after
24 2020 -- and you can understand -- 2029
25 {sic} -- you can understand that this was

<p style="text-align: right;">Page 270</p> <p>1 published in 2018 -- there have been five 2 years' worth of data that are damning. I 3 mean, really. 4 And, again, I wish I could see 5 the future, and I would have been much more 6 accurate in saying this is small study. This 7 is something that we -- that we have done 8 that is not consistent with the causation. 9 But, again, it's only one of 10 the studies that are there in the universe of 11 studies. And to say -- there were already a 12 few studies that were interesting, and there 13 are many more now that are even more 14 interesting to have my opinion. 15 Q. Dr. Baccarelli, at the time 16 that this was published in 2019, you agreed 17 with the statement that because of 18 inconsistent epidemiologic findings and 19 without an identified mechanism, causality of 20 any association observed in the other studies 21 could not be established, right? 22 A. I didn't say that. 23 MR. SNIDOW: Objection. Hold 24 on. Hold on. Objection to the form. 25</p>	<p style="text-align: right;">Page 272</p> <p>1 Q. What's the first sentence in 2 the final paragraph of your conclusion? 3 A. It's what this paper -- again, 4 this is a paper of 138 people that shows no 5 association between intelligence. 6 Q. Okay. Are you able to read the 7 first sentence of your final -- 8 A. Yeah. 9 Q. -- conclusion paragraph? 10 What's it say? 11 A. In this paper, in this specific 12 paper, which, again, is in conflict with the 13 overwhelming majority of other papers in the 14 universe of literature -- and it happened to 15 be authored by me, but, I mean, I can be 16 severe and strict with this paper as with any 17 other -- we did not find evidence of 18 neurodevelopmental harm from prenatal 19 exposure to acetaminophen measurement in 20 meconium. And, therefore, this is -- this is 21 something that is -- really applies to this 22 paper. It does not apply to the -- to the 23 causation in general. 24 Q. At the time, in this paper, you 25 did not find evidence of neurodevelopmental</p>
<p style="text-align: right;">Page 271</p> <p>1 QUESTIONS BY MR. MURDICA: 2 Q. You didn't say that? 3 A. I -- the conclusion -- that is 4 only one sentence -- 5 Q. Right. 6 A. -- and it's theoretical. It's 7 a theoretical sentence that in general 8 applies to the -- to the level of theory. 9 So here, what I said in the 10 beginning is that we did not find evidence of 11 neurodevelopmental harm. And again, 12 everything here is read to intelligence. It 13 is not ASD and ADHD. We were studying 14 intelligence. 15 So don't get the sentence and 16 put it to ASD and ADHD. Those sentences have 17 very little to do with ADHD and ASD. We 18 mentioned ADHD and ASD to point out the 19 difference between our study and the previous 20 studies. 21 Q. Doctor, please turn to 22 page 143. You were reading from the last 23 sentence in the conclusion. 24 Right? 25 A. Yes.</p>	<p style="text-align: right;">Page 273</p> <p>1 harm from prenatal exposure to acetaminophen, 2 correct? 3 A. In this paper, I didn't find an 4 association in a small study between 5 acetaminophen during -- in meconium and 6 intelligence of the child. 7 Q. This study -- and this study 8 did not support, at the time, causation of 9 acetaminophen with neurodevelopmental 10 disorders, correct? 11 A. Not only at the time, but also 12 today. Today doesn't support any 13 association. And, therefore, this is one of 14 the few papers today that doesn't support 15 association. 16 Q. Okay. 17 A. I considered that in the 18 literature. It's in my tables, so you can 19 understand how -- you can cherry-pick this 20 paper as much as you want, but it's already 21 in my tables. 22 Q. Yeah. 23 A. So I said in my tables that the 24 evidence supporting the association due to 25 this paper is zero.</p>

Page 274

1 Q. Dr. Baccarelli, you just used
 2 the word "cherry-pick," but this is the first
 3 paper that you published on this, so this is
 4 the first paper I'm asking you about.
 5 MR. SNIDOW: Objection to the
 6 form.
 7 THE WITNESS: No, no, you're
 8 not cherry-picking on the paper;
 9 you're cherry-picking on the sentences
 10 in the paper.
 11 QUESTIONS BY MR. MURDICA:
 12 Q. Okay. You wrote every sentence
 13 in the paper, right? Or you revised it?
 14 A. No, I did not write --
 15 Q. You stand by -- you stood by
 16 every sentence in the paper when you
 17 submitted it to be published in a journal,
 18 correct?
 19 MR. SNIDOW: Hold on.
 20 Objection to the form.
 21 THE WITNESS: I used to read
 22 the paper from -- as I -- as a whole,
 23 and each sentence makes sense in the
 24 context. If you take it out of
 25 context --

Page 275

1 QUESTIONS BY MR. MURDICA:
 2 Q. Right.
 3 A. -- and you told me about this
 4 sentence that -- any sentence that -- if it
 5 were written today and in the absence of the
 6 entire paper, I cannot stand by those
 7 sentences because they're not in context.
 8 Q. Dr. Baccarelli, when you went
 9 out and told the world about this paper, you
 10 didn't limit it to intelligence. You talked
 11 about neurodevelopment, right?
 12 A. In general. I mean, as --
 13 again, what I'm say -- this paper doesn't
 14 support -- I didn't say this paper shows that
 15 there is no toxicity whatsoever.
 16 Q. Okay.
 17 A. If you read the sentences, it
 18 doesn't -- I use negative language. We use
 19 negative language. We don't use affirmative
 20 language.
 21 So if you read this paper
 22 carefully, it says this paper doesn't support
 23 the association. It doesn't say the
 24 association doesn't exist. They're very two
 25 different concepts.

Page 276

1 Q. And you criticize your own
 2 paper now, Exhibit 90, because of sample
 3 size, right?
 4 A. Today? Yes.
 5 Q. Today.
 6 A. Because there many -- at the
 7 time, I felt it was a perfectly okay sample
 8 size because of some advantages like
 9 measuring meconium and using a medical value
 10 for intelligence.
 11 Q. And you don't stand by your
 12 criticism of the cohort studies that were
 13 included in Laue, correct?
 14 MR. SNIDOW: Objection to the
 15 form.
 16 THE WITNESS: I'm not
 17 understanding. I don't understand the
 18 question.
 19 QUESTIONS BY MR. MURDICA:
 20 Q. We asked questions about the --
 21 do you remember when I read to you citations
 22 in your study that appear to be discordant
 23 from Avella-Garcia, Brandlistuen, Liew,
 24 Stergiakouli, Thompson, Vlenterie and Ystrom?
 25 MR. SNIDOW: Objection.

Page 277

1 Objection to the form.
 2 QUESTIONS BY MR. MURDICA:
 3 Q. Do you remember when I read
 4 those to you?
 5 A. I remember.
 6 Q. Yeah.
 7 A. And I could say three years
 8 ago, and I could say that four years ago and
 9 now, that in those papers there is an
 10 exposure misclassification, and especially
 11 the measure -- the measurement in meconium.
 12 So I'm positive that our study had an
 13 advantage over those cohorts, measuring
 14 acetaminophen in meconium, that those cohorts
 15 didn't do.
 16 And again, there can be a
 17 problem in studies like this because if there
 18 is misclassification of exposures, meaning
 19 women cannot recall exactly what -- whether
 20 they took Tylenol and how much they took over
 21 pregnancy, that can bias the result, as I
 22 wrote in my report.
 23 The bias is likely to be toward
 24 the null, meaning they're likely to cause a
 25 false negative, not false positives.

Page 278

1 Over here, we have a bunch of
 2 studies that are positive. So if there is a
 3 problem -- I'm really sorry, but if there is
 4 a problem, it's that these studies are all
 5 underestimating the true effect of Tylenol on
 6 neurodevelopment.
 7 Q. Right.
 8 And you didn't say what you
 9 just said now in Exhibit 90 at the time,
 10 correct?
 11 A. I --
 12 MR. SNIDOW: Objection to the
 13 form.
 14 THE WITNESS: I want to point
 15 out that this paper is about
 16 intelligence. The other studies were
 17 about ADHD.
 18 My -- I did not write this
 19 paper to criticize the literature. I
 20 write this paper to report on my
 21 results.
 22 QUESTIONS BY MR. MURDICA:
 23 Q. Okay. Did you think at the
 24 time that the -- those studies were weak?
 25 A. I thought -- at the time, I

Page 279

1 thought that we had an advantage on them. We
 2 measured -- we measured -- we measured
 3 acetaminophen in meconium, and they didn't.
 4 Q. And you thought that the
 5 parental report aspect of those studies
 6 biased them, right?
 7 A. Which parental report?
 8 Q. In the data -- in the cohort
 9 studies, the fact that they were taking
 10 maternal report for use of acetaminophen.
 11 A. Maternal report -- as I said
 12 before, parental report can hide the
 13 association.
 14 Q. Okay.
 15 A. So if they -- if you're asking,
 16 I mean, what I think now and probably what I
 17 would have thought back then is that if the
 18 parental report of acetaminophen, the
 19 association would be smaller or a false
 20 negative.
 21 Q. Okay. And --
 22 A. I understand those papers show
 23 the association, so that is not the
 24 problem with -- there's no dation, correct.
 25 Q. Okay. So it's your testimony

Page 280

1 that you weren't, in Laue 2019, criticizing
 2 the methodology of those papers and
 3 explaining why they found an association but
 4 you didn't?
 5 MR. SNIDOW: Objection to form.
 6 THE WITNESS: Again, I was just
 7 saying -- I didn't get that far. In
 8 Laue, we were just saying there are
 9 differences between my study and the
 10 past. And the reason why we don't see
 11 it -- they are many, including small
 12 sample size, I will say now. But
 13 sample size is not everything.
 14 QUESTIONS BY MR. MURDICA:
 15 Q. Okay.
 16 A. As you understand, sample size
 17 is not everything. I wanted to point out
 18 particularly the strength of our study, which
 19 was particularly measuring acetaminophen in
 20 meconium that could turn out an association
 21 to be positive if there is one as opposed to
 22 other studies, the use of reports of using
 23 acetaminophen that could help to hide the
 24 association.
 25 Q. Okay. And when you -- when you

Page 281

1 published Laue 2019, you went on Twitter and
 2 you talked about it, right?
 3 A. I think so.
 4 Q. Yeah.
 5 When is the last time you
 6 looked at those tweets?
 7 MR. SNIDOW: Objection to the
 8 form.
 9 Just, Dr. Baccarelli, you can
 10 answer, but not in the context of
 11 anything that you've discussed with
 12 any attorneys.
 13 THE WITNESS: Of course.
 14 I -- I looked at that probably
 15 one week ago.
 16 QUESTIONS BY MR. MURDICA:
 17 Q. Okay. So in preparation for
 18 the depon -- for your deposition, you saw
 19 this?
 20 A. While I was doing -- while I
 21 was studying my materials, I type in to find
 22 stuff on Google that were about
 23 acetaminophen.
 24 Q. Okay. I take it you don't
 25 stand by what you tweeted back then?

Page 282

1 A. I think the -- if you look at
2 that tweet and you click on it, it was
3 tweeted at 6:20 a.m. in the morning. I wake
4 up until 6:30, so I was probably not
5 completely woken up that morning.
6 Q. Have you -- have you removed
7 that tweet now?
8 A. I don't need to. I -- I'm
9 happy to be wrong sometimes. People know I'm
10 wrong many times. If I was wrong, it's okay.
11 Q. Okay. At the time, at the 6:20
12 in the morning, you're not being paid to be
13 part of this litigation, correct?
14 MR. SNIDOW: Objection to form.
15 THE WITNESS: I think you
16 understand that I wrote many times
17 over and over again over time, as I
18 explained, that I believe that ADHD
19 and acetaminophen are linked and
20 causally linked. I wrote it, for
21 instance, in Baker 2020 to -- for
22 extent {sic}. So you have evidence
23 well before the litigation that
24 explained my opinion.
25 I disclosed that I was a

Page 283

1 nonbeliever, and I think I disclosed
2 that I was a nonbeliever at the time
3 of publication of 2019. And so you
4 have a nonbeliever there that gets
5 upset because someone criticizes my
6 paper.
7 QUESTIONS BY MR. MURDICA:
8 Q. Is there anywhere on Twitter
9 where you have put your current opinion?
10 A. I put it everywhere. I put it
11 here. I told to colleagues. I want to
12 publish these results.
13 Q. Is it on Twitter?
14 A. Twitter is not an official mean
15 of communication, as far as I know.
16 Q. I'm just asking.
17 A. I don't put on Twitter all my
18 opinions. I put only a part of them, so --
19 Q. Okay. So the answer is no,
20 right, Doctor?
21 A. If you want, I can -- I can
22 take a time machine and go one year ago and
23 tweet it. I will do it easily and happily.
24 (Baccarelli Exhibit 94 marked
25 for identification.)

Page 284

1 QUESTIONS BY MR. MURDICA:
2 Q. Okay. Dr. Baccarelli, I've
3 marked as Exhibit 94 a printout from Twitter.
4 A. Uh-huh.
5 Q. You have that in front of you
6 now, right?
7 A. Correct.
8 Q. Okay. Is this what you
9 reviewed in the last week in preparation for
10 your deposition?
11 MR. SNIDOW: And actually, Jim,
12 I think we've got an agreement that
13 we're not going to ask questions like
14 that.
15 MR. MURDICA: Not questions
16 like that.
17 MR. SNIDOW: I'm looking at it
18 right here. It says, "No questions on
19 activities undertaken by the expert to
20 prepare for his or her deposition."
21 So on that basis, I'm
22 instructing you not to answer.
23 MR. MURDICA: Okay. He
24 testified he found it on Google.
25 MR. SNIDOW: Yeah.

Page 285

1 QUESTIONS BY MR. MURDICA:
2 Q. Is this what you found on
3 Google, Doctor?
4 A. Yes.
5 Q. Okay. So you saw this whole
6 exchange prior to today?
7 A. Yeah, absolutely.
8 Q. Okay. Because it wasn't
9 just -- it wasn't just 6:20 a.m. You sent --
10 you sent -- you made a tweet, right? And
11 then the next day --
12 A. The done at 6:20 a.m. -- sorry,
13 go ahead.
14 Q. There's not just one tweet
15 here. There's two, correct? By you?
16 A. There is one tweet that is sent
17 out by my communication officer who does the
18 tweets for me. I have a communication person
19 who tweets out. She tweets -- at the time,
20 she tweeted most of my papers, if not all.
21 Q. Okay.
22 A. Now, unfortunately, she's too
23 busy. I need to tweet it -- tweet it on my
24 own. But at the time, she used to tweet
25 everything that we published. So she wrote

<p style="text-align: right;">Page 286</p> <p>1 this for me, I approved it, and it seems 2 okay. This is the result of our paper. 3 Q. Okay. 4 A. Our paper is not consistent 5 with the hypothesis. 6 Q. So on January 3, 2020, you, 7 through your assistant, tweeted about the 8 Laue study we just looked at, correct? 9 A. Correct. And that says it 10 finds no association between acetaminophen 11 levels in meconium and child 12 neurodevelopment. 13 Q. Okay. 14 A. So this is exactly the same 15 message in the paper, so I'm not surprised. 16 Q. Yeah. Well, it doesn't say 17 intelligence; it says neurodevelopment. 18 Correct? 19 A. Again, found no associa -- 20 intelligence -- intelligence is a type of 21 neurodevelopmental outcome. So if you're 22 saying this tweet is inaccurate, yes, it's 23 inaccurate. 24 Q. And then Dr. Bauer replied, 25 right?</p>	<p style="text-align: right;">Page 288</p> <p>1 I was just defending the right 2 to publish this article. I was not giving 3 any opinion on causation. 4 Q. Okay. Your words were, "Sample 5 size is not everything in research." 6 Correct? 7 A. Oh, I think we all agree on 8 that. 9 Q. Yeah. You were defending the 10 sample size of the Laue study, right? 11 A. Correct. 12 And that because we have 13 acetaminophen, and therefore this -- as you 14 understand, power depends -- power depends 15 not only on sample size. I think you can 16 read any biostatistic book or epidemiology 17 book. Sample size is not the only 18 contributor to power. 19 Q. Do you recall criticizing the 20 sample size of Laue earlier today in your 21 testimony? 22 A. Yeah, absolutely. 23 Q. Okay. 24 A. And I'm not saying this -- 25 there is nowhere here or in the paper saying</p>
<p style="text-align: right;">Page 287</p> <p>1 A. Yep. 2 Q. And then you end up replying to 3 that a week later, right? 4 A. Yep. 5 Q. Okay. And was this written by 6 your assistant? 7 A. No, this was written by me at 8 6:20 a.m. in the morning. 9 Q. Okay. 10 A. And to say it's unilateral and 11 probably inaccurate now, probably inaccurate 12 back then. 13 And it's -- perhaps it's not 14 the reason why I wrote this, but it's 15 definitely -- it's definitely something that 16 can be misread and misinterpreted. And they 17 learned that on Twitter a hard way. On 18 Twitter need to write things that can be read 19 different ways. 20 What this tweet meant, it meant 21 only one thing. We have an advantage. You 22 cannot take down this study just because it's 23 a sample size sample, because there are 24 advantages. One of the advantages is 25 measuring acetaminophen in meconium.</p>	<p style="text-align: right;">Page 289</p> <p>1 this is a study with a great sample size. 2 I'm just saying sample size is small, but 3 sample size is not the only one thing in 4 research. I think we can agree that this is 5 acceptable as of today. 6 Q. The next sentence you wrote 7 was -- and this is to Dr. Bauer. "You may 8 want to elaborate on the weaknesses of those 9 studies." 10 Right? Those were your words? 11 A. Exactly. And I was referring 12 about the lack of meconium measurement in 13 those studies. 14 Q. All right. We're going to mark 15 this. 16 MR. SNIDOW: Jim, if you're 17 switching exhibits, do you want to do 18 a break now? I think we've been going 19 for another hour. 20 MR. MURDICA: This is part of 21 this. When I'm done with this, that's 22 fine. 23 MR. SNIDOW: Fair. 24 (Baccarelli Exhibit 95 marked 25 for identification.)</p>

<p style="text-align: right;">Page 290</p> <p>1 QUESTIONS BY MR. MURDICA:</p> <p>2 Q. Doctor, you now have in front</p> <p>3 of you what's been marked as Exhibit 95.</p> <p>4 Do you see that?</p> <p>5 A. Yeah. I need to point out,</p> <p>6 though, that when it was in the tweet, it was</p> <p>7 much smaller, and I never actually went back</p> <p>8 after 6:20 a.m. to read the entire -- the</p> <p>9 entire list of studies.</p> <p>10 So I just -- my tweet was only</p> <p>11 based on my understanding we were talking</p> <p>12 about intelligence and there were studies</p> <p>13 before. And it was just to say, this is a</p> <p>14 study that has the right to be published.</p> <p>15 Other than that, there is no</p> <p>16 bearing to other opinions I had at the time</p> <p>17 or now.</p> <p>18 Q. Dr. Baccarelli, you wrote, "You</p> <p>19 may want to elaborate on the weaknesses of</p> <p>20 those studies," and those studies were in a</p> <p>21 chart that's reflected on Exhibit 95,</p> <p>22 correct?</p> <p>23 A. Correct. And you understand in</p> <p>24 my report I also elaborate on the weaknesses</p> <p>25 of those studies. And again, most of the</p>	<p style="text-align: right;">Page 292</p> <p>1 prove causation in this case because,</p> <p>2 again, the weaknesses of these studies</p> <p>3 would hide the association. It would</p> <p>4 not make the association to appear.</p> <p>5 QUESTIONS BY MR. MURDICA:</p> <p>6 Q. Dr. Baccarelli, were you being</p> <p>7 paid by anyone for the opinions you expressed</p> <p>8 in the tweet at the time in 2019?</p> <p>9 MR. SNIDOW: Objection to the</p> <p>10 form.</p> <p>11 THE WITNESS: I'm not paid now</p> <p>12 either to express an opinion. I'm</p> <p>13 sorry. I'm paid to do research, not</p> <p>14 to express an opinion. And you</p> <p>15 understand that very well.</p> <p>16 MR. SNIDOW: Break?</p> <p>17 MR. MURDICA: Sure.</p> <p>18 MR. SNIDOW: Thanks.</p> <p>19 VIDEOGRAPHER: The time right</p> <p>20 now is 2:07 p.m. We are off the</p> <p>21 record.</p> <p>22 (Off the record at 2:07 p.m.)</p> <p>23 VIDEOGRAPHER: The time right</p> <p>24 now is 2:20 p.m. We are back on the</p> <p>25 record.</p>
<p style="text-align: right;">Page 291</p> <p>1 weaknesses -- not all the weaknesses of those</p> <p>2 studies will make the association go away.</p> <p>3 Q. Okay. And the studies you were</p> <p>4 referring to in Exhibit 94, your tweet, are</p> <p>5 represented on Exhibit 95. And they are</p> <p>6 Brandlistuen 2013, Vlenterie 2016; Ystrom</p> <p>7 2017; Liew 2014, 2015, 2016, another 2016;</p> <p>8 Petersen 2018; Thompson 2014; Avella-Garcia</p> <p>9 2016; Ruish 2017; Stergiakouli 2016; Bornehag</p> <p>10 2017; Laue 2018; Ji 2018; Toro-Rodriguez --</p> <p>11 Toro-Rodriguez 2018; Liew 2019; Leppart 2019;</p> <p>12 Tronnes 2019; Chen 2019; Gervin 2019; Golding</p> <p>13 2019; Rifas-Shiman 2019; and Ji 2019.</p> <p>14 Correct?</p> <p>15 MR. SNIDOW: Objection. Form.</p> <p>16 THE WITNESS: Now, I need to</p> <p>17 reiterate that I never opened up this</p> <p>18 table, never analyzed, never looked</p> <p>19 at.</p> <p>20 I'm just replying by saying my</p> <p>21 paper is science, it should be</p> <p>22 published, and that it is what it is.</p> <p>23 My tweet cannot be taken as</p> <p>24 a -- as a criticism related to whether</p> <p>25 or not these studies are sufficient to</p>	<p style="text-align: right;">Page 293</p> <p>1 QUESTIONS BY MR. MURDICA:</p> <p>2 Q. Welcome back, Dr. Baccarelli.</p> <p>3 Are you ready to proceed?</p> <p>4 A. Yes, I am.</p> <p>5 Q. Okay. During the last session,</p> <p>6 plaintiffs' counsel turned over your retainer</p> <p>7 agreement --</p> <p>8 A. Uh-huh.</p> <p>9 Q. -- to work for them in this</p> <p>10 litigation. I'm going to represent to you</p> <p>11 that that was signed on December 22, 2023.</p> <p>12 Do you disagree with that?</p> <p>13 A. You mean 2022?</p> <p>14 Q. 2022.</p> <p>15 A. Okay. Yes, I think that might</p> <p>16 be right, yeah.</p> <p>17 Q. Okay. We're going to print and</p> <p>18 mark it as the next exhibit, so we'll just</p> <p>19 leave a placeholder for Exhibit 96 for your</p> <p>20 retention agreement.</p> <p>21 A. Uh-huh.</p> <p>22 (Baccarelli Exhibit 96 marked</p> <p>23 for identification.)</p> <p>24 QUESTIONS BY MR. MURDICA:</p> <p>25 Q. Okay. So if that's correct,</p>

Page 294

1 Doctor, that you were retained in December of
 2 2022, that means that when you spoke to that
 3 financial firm, you were already working for
 4 the plaintiffs, correct?
 5 A. I had signed an agreement, but
 6 probably -- I don't think I had done much
 7 work by then.
 8 Q. But you knew that one side of
 9 the litigation had retained you at that
 10 point, correct?
 11 A. That is correct.
 12 And again, I spoke to this
 13 firm, to the best of my knowledge, just to
 14 report my opinion as a scientist, as I would
 15 do and I did with many of my colleagues.
 16 So I -- there is no
 17 inconsistency between what I did in this case
 18 and what I spoke to the firm, too, and what I
 19 said to my colleagues.
 20 Q. And to the best of your
 21 knowledge, you did not disclose to the
 22 financial firm that you were working on the
 23 litigation for one party, correct?
 24 A. They didn't ask me. I didn't
 25 disclose.

Page 295

1 Q. Okay. Earlier today you
 2 mentioned a colleague of yours, Raphael
 3 Cassoulet.
 4 Do you remember that?
 5 A. Yes.
 6 Q. As somebody else in your group
 7 that had worked on meconium, right?
 8 A. So there is a paper that he
 9 published that is -- he's in my collaborative
 10 group. I believe he's one of the colleagues
 11 in Montreal.
 12 Q. Yeah.
 13 And you have that --
 14 A. Yeah.
 15 Q. I saw you turned to something.
 16 A. Yeah.
 17 Q. So --
 18 A. It's the paper, I think.
 19 Q. What is it called?
 20 A. It's called, "Monitoring of
 21 prenatal exposure to organic and inorganic
 22 contaminants using meconium from an Eastern
 23 Canada cohort."
 24 Q. Let's just mark that since the
 25 Doctor is looking at it.

Page 296

1 A. It's in a different format. I
 2 would like to get yours.
 3 Q. Okay.
 4 A. So it's printed as PDF, and
 5 yours is -- it's -- the pages are not going
 6 to correspond.
 7 Q. I understand. I'll give you
 8 your own. So we'll mark this as 97.
 9 (Baccarelli Exhibit 97 marked
 10 for identification.)
 11 QUESTIONS BY MR. MURDICA:
 12 Q. Doctor, you have what's been
 13 marked as Exhibit 97 in front of you.
 14 Is that what you were looking
 15 at?
 16 A. Yes.
 17 Q. In your binder?
 18 Okay. And this is your study,
 19 right?
 20 A. I'm one of the coauthors.
 21 Q. Okay. And you reviewed it
 22 before it was published, just like the Laue
 23 study, right?
 24 A. I did review it, of course.
 25 Usually I read the papers I'm the last author

Page 297

1 or the first authors two or three times. I
 2 typically do it -- when I'm the coauthor in
 3 our group, usually it's one or two times. So
 4 I can't say I reviewed it with the same
 5 degree of attention, but definitely I read --
 6 I read it through.
 7 Q. Do you recall if you edited it?
 8 A. Yes, of course --
 9 Q. Okay.
 10 A. -- I did provide comments and
 11 any suggestions I had.
 12 (Baccarelli Exhibit 98 marked
 13 for identification.)
 14 QUESTIONS BY MR. MURDICA:
 15 Q. Okay. We'll mark a redline as
 16 Exhibit 98.
 17 Dr. Baccarelli, you now have in
 18 front of you what's been marked as
 19 Exhibit 98?
 20 A. Uh-huh.
 21 Q. Does that appear to be a draft
 22 of the publication that's Exhibit 97?
 23 A. Yes, it is.
 24 Q. And in fact, if you look on the
 25 first page, we see that your first edit was

<p style="text-align: right;">Page 298</p> <p>1 to include your middle initial in redline, 2 right? 3 A. Uh-huh. 4 Q. Okay. And if you turn to 5 page 13 of the draft. 6 Let me know when you're there. 7 A. Uh-huh. 8 Q. Okay. So you have some 9 redline -- redlines and comments in here -- 10 A. Sorry. 11 Q. -- but not on page 13, right? 12 A. Sorry, which page? 13 Q. 13 on the bottom. 14 A. Okay. Here there are no 15 comments, no. 16 Q. Okay. There are no comments on 17 page 13, but if you look earlier, you have 18 some redlines beforehand, right? 19 A. Uh-huh, yeah. 20 Q. One of the things it says here 21 is that whether or not -- "The use of 22 acetaminophen during pregnancy has been 23 associated with abnormal fetal 24 neurodevelopment or disorders. Whether or 25 not this association reflects direct effects</p>	<p style="text-align: right;">Page 300</p> <p>1 it, correct? 2 A. I didn't make a comment about 3 that, absolutely. 4 But as I mentioned before, 5 that's theoretically a point, but it's very 6 uncommon or unlikely that represents a big 7 part of the acetaminophen we find in 8 meconium. Because meconium accumulates over 9 five months. One day, or less than one day, 10 can't be a big part of that. 11 Again, meconium gets produced a 12 few units every day, and on average takes a 13 half a day to produce meconium if treated 14 after -- after delivery. So it's really a 15 small part of the entire meconium that is 16 produced after delivery. So that's it. 17 Q. Okay. You chose not to comment 18 on it or remove it, and you reviewed it, 19 correct? 20 A. I did -- evidently I didn't 21 comment. 22 Q. Okay. If you look on page 4, 23 the first sentence on page 4 is that 24 "Xenobiotics can be analyzed in cord blood," 25 but that -- this only provides a snapshot of</p>
<p style="text-align: right;">Page 299</p> <p>1 of the molecule or confounded effects from 2 other unmeasured factors linked to the intake 3 of acetaminophen remains to be fully 4 studied." 5 Do you see that? 6 A. That is what Stergiakouli 7 says -- 8 Q. Yes. 9 A. -- as indicated in the -- 10 there's a reference that says that's 11 Stergiakouli's opinion. 12 Q. Okay. And you reviewed this 13 and didn't change it, right? 14 A. I mean, I agree that 15 Stergiakouli says that. 16 Q. Okay. And then it says, 17 "Concentration of acetaminophen in meconium 18 needs to be examined with caution since 19 newborns are sometimes treated with 20 acetaminophen before the release of 21 meconium." 22 Do you see that? 23 A. Of course. 24 Q. Okay. And you didn't -- you 25 didn't delete that or make a comment about</p>	<p style="text-align: right;">Page 301</p> <p>1 the fetus exposure. 2 A. Uh-huh. 3 Q. Right? 4 A. Correct. 5 Q. And you agree with that, right? 6 Cord blood provides a snapshot in time? 7 A. Yeah, it's really -- first of 8 all, it's -- it measures only what is present 9 there. Of course there is a big question as 10 to whether it reflects typical use of 11 acetaminophen over time, which some women 12 might. Some women might have typical use 13 that also occurs that day. 14 Q. And they might not, right? 15 A. Agree. 16 Q. Okay. Was that a yes, for the 17 transcript? 18 A. They may not. 19 Q. Okay. Then you have a -- it's 20 says, "Meconium can thus potentially record 21 fetus exposure to xenobiotics for up to six 22 to seven months." 23 And you have a comment, "Is 24 most meconium produced at the end of 25 pregnancy? Or pretty constantly over those</p>

<p style="text-align: right;">Page 302</p> <p>1 six to seven months?"</p> <p>2 Do you see that?</p> <p>3 A. Absolutely. And it's clear</p> <p>4 that this was the first paper we ever</p> <p>5 published about meconium. I was a coauthor.</p> <p>6 This was lead by Dr. J.P. Bellenger, who is a</p> <p>7 biochemist, and this is how I learned about</p> <p>8 meconium. I learned about meconium because</p> <p>9 J.P. Bellenger and Cassoulet explained to me.</p> <p>10 As you can see, I was curious, and I wanted</p> <p>11 to learn.</p> <p>12 Q. Right. At the time they wrote</p> <p>13 that -- oh, sorry.</p> <p>14 A. And they confirm that what they</p> <p>15 wrote here is true. And in fact, there are</p> <p>16 references that support that.</p> <p>17 For instance, one of the</p> <p>18 references that are shown here says that it</p> <p>19 reflects months' worth of exposure, so it is</p> <p>20 the longer biomarker you can get in children.</p> <p>21 Q. Which reference is that?</p> <p>22 A. It's one of those. I think</p> <p>23 Ostrea or Gareri, one of the two.</p> <p>24 Q. Gareri?</p> <p>25 A. I think so.</p>	<p style="text-align: right;">Page 304</p> <p>1 Q. Doctor, one of the things that</p> <p>2 you did in rendering your opinions here was</p> <p>3 you utilized something called a navigation</p> <p>4 guide --</p> <p>5 A. Uh-huh.</p> <p>6 Q. -- to analyze the different</p> <p>7 literature, correct?</p> <p>8 A. Correct.</p> <p>9 Q. Okay. And that -- this is not</p> <p>10 the first time that you had used the</p> <p>11 navigation guide, right?</p> <p>12 A. It's not the first time I used</p> <p>13 the criteria in the navigation guide.</p> <p>14 As you can see in the -- in my</p> <p>15 report, there are criteria that I use every</p> <p>16 day. I use the -- I used it to -- because</p> <p>17 they are pretty straightforward. There is</p> <p>18 a risk of bias analysis and a contribution to</p> <p>19 evidence. There are about eight criterion in</p> <p>20 the risk of bias analysis. There are about</p> <p>21 eight criteria also in the evidence analysis.</p> <p>22 And these are the usual one any</p> <p>23 epidemiologist would use in using -- in</p> <p>24 assessing an opinion.</p> <p>25 And there to say the navigation</p>
<p style="text-align: right;">Page 303</p> <p>1 Q. Okay.</p> <p>2 A. I wouldn't be completely sure.</p> <p>3 Q. So your testimony is that one</p> <p>4 of those two says --</p> <p>5 A. There are references in the --</p> <p>6 in the literature that say that.</p> <p>7 Q. Okay. So at the time that you</p> <p>8 wrote this comment, you didn't know what</p> <p>9 meconium was reflective of in terms of the</p> <p>10 exposure time during pregnancy, correct?</p> <p>11 A. I wanted to -- as I mentioned</p> <p>12 before, I often play the devil's advocate,</p> <p>13 and I want to bring up all the possible</p> <p>14 theoretical arguments against our statement.</p> <p>15 And I wanted to be sure that I understood</p> <p>16 what meconium stand by.</p> <p>17 So at the time, I was still</p> <p>18 learning, and I was educated by my</p> <p>19 colleagues, particularly J.P. Bellenger, who</p> <p>20 is the mind between using meconium, that he</p> <p>21 was in -- familiar with the literature, and</p> <p>22 he was right, what is -- what we see here is</p> <p>23 right.</p> <p>24 So as always, I ask questions</p> <p>25 because I want to learn.</p>	<p style="text-align: right;">Page 305</p> <p>1 guide, the name tells it all. It's a guide</p> <p>2 on -- especially about documenting and making</p> <p>3 your analysis transparent to other. It's not</p> <p>4 a magic tool that gives answer.</p> <p>5 Q. Do you remember my question?</p> <p>6 A. I -- yeah. And I say I use the</p> <p>7 same criteria as in the navigation guide many</p> <p>8 times, is my answer.</p> <p>9 Q. Okay. The navigation guide was</p> <p>10 first published in 2014, correct?</p> <p>11 A. I think you might be right,</p> <p>12 yeah.</p> <p>13 Q. Okay. Have you ever used a</p> <p>14 navigation guide in litigation before now?</p> <p>15 MR. SNIDOW: Objection to form.</p> <p>16 THE WITNESS: I only worked in</p> <p>17 one litigation, and I was not -- I</p> <p>18 didn't use the navigation guide</p> <p>19 because it was not about general</p> <p>20 causation.</p> <p>21 QUESTIONS BY MR. MURDICA:</p> <p>22 Q. All right.</p> <p>23 A. Because it was one single case,</p> <p>24 and I didn't -- it was about a toxic exposure</p> <p>25 that is known to be toxic, so I didn't have</p>

Page 306

1 to do the navigation guide.

2 Q. In your non-litigation work,

3 have you utilized the navigation guide to

4 render a causation analysis?

5 A. Again, I used the same

6 criteria, but in coming up for this

7 deposition, I was made aware that I might --

8 my criteria might have been questioned. My

9 analysis of the literature might have been

10 questioned.

11 So one of the ideas that came

12 to mind is to use a tool and find the tool

13 that will make my research completely

14 transparent to everyone who can read it,

15 including you.

16 So this tool is helpful for me

17 to -- it's a tool that helps me to document

18 my analysis. It shows the paper is

19 categorized based on 20 criteria, as you can

20 see for each of the paper how I created each

21 of the criteria.

22 So, again, usually this is done

23 without disclosing all the criteria you have.

24 So I used the navigation guide

25 because I became aware that I needed to be

Page 307

1 particularly transparent and particularly

2 open about how I evaluated every paper and

3 how I -- I used it in my overall conclusion.

4 Q. Okay. So, Dr. Baccarelli, you

5 discovered the tool, the navigation guide,

6 after you were hired for this litigation,

7 right?

8 MR. SNIDOW: Objection to the

9 form.

10 THE WITNESS: No. No, I know

11 one of the people who created the

12 navigation guide very well, Tracey

13 Woodruff. She's a colleague who used

14 to work at the EPA, and she wrote the

15 navigation guide with many colleagues

16 at the EPA.

17 And I -- the tool is pretty

18 popular. In the literature it's

19 pretty popular. She has been

20 suggesting that we use it whenever we

21 need to document our criteria.

22 And at the same time, I want to

23 point out the navigation guide is not

24 that new, because it's essentially the

25 same as GRADE. GRADE is a similar

Page 308

1 guide that has been in existence for

2 25 times, and there are very minor --

3 for 25 years. And there are many

4 minor differences between GRADE and

5 the navigation guide. If I use GRADE,

6 it would have been exactly the same.

7 The navigation guide is more --

8 it has been -- is GRADE tailored for

9 observational studies. Because these

10 are all observational studies, the

11 navigation guide is more appropriate

12 than GRADE.

13 QUESTIONS BY MR. MURDICA:

14 Q. Dr. Baccarelli --

15 A. Uh-huh.

16 Q. -- do you remember my question?

17 MR. SNIDOW: Objection to form.

18 THE WITNESS: Please, let me

19 know.

20 QUESTIONS BY MR. MURDICA:

21 Q. Okay. I don't think that you

22 do. I'll ask another one, but please do your

23 best --

24 A. I did answer, by the way, but

25 please go ahead.

Page 309

1 Q. Please do your best.

2 Okay. Have you utilized the

3 navigation guide in your work at Columbia

4 prior to this engagement?

5 A. As I said, I -- I think I

6 replied. If I didn't, I'm so sorry, because

7 I really thought I did.

8 It's the first time I need to

9 show to anyone exactly how I grade and how I

10 assign each of the papers. I usually use all

11 the criteria in the navigation guide in my

12 daily job at Columbia or elsewhere, and when

13 I give opinion about causation, I have all

14 the criteria in mind.

15 The navigation guide is a tool

16 that gives additional transparency, and it's

17 really done to your benefit so that you can

18 see exactly whether you agree or disagree

19 with me.

20 So this is the first time I

21 work on a case on causation. It's only my

22 second case, ever. And I was made aware, and

23 I became aware while I was working on it,

24 that I had to be particularly transparent

25 about how I grade every paper.

<p style="text-align: right;">Page 310</p> <p>1 So this is why I decided to use</p> <p>2 for the first time the navigation guide,</p> <p>3 because the navigation guide really gives me</p> <p>4 added capacity to show exactly what I did at</p> <p>5 each step of the way.</p> <p>6 And you can see it in the</p> <p>7 tables. There are nine tables here, and each</p> <p>8 of the paper is classified according to</p> <p>9 criterion in three tables. As you can see</p> <p>10 exactly what I did. So if you disagree with</p> <p>11 any of the -- of the ways I classify the</p> <p>12 paper in the navigation guide, we can</p> <p>13 discuss.</p> <p>14 But clearly this is not a</p> <p>15 tool -- a magic box that spits an answer.</p> <p>16 It's a way to document what I did and really</p> <p>17 creates transparency for you, for the judge,</p> <p>18 for the defense.</p> <p>19 And also, I have to say this is</p> <p>20 why I'm pretty proud of this. Because for</p> <p>21 the first time I will publish a paper with a</p> <p>22 navigation guide, which will give me the</p> <p>23 opportunity to provide transparency about the</p> <p>24 studies to everyone who is going to read the</p> <p>25 papers.</p>	<p style="text-align: right;">Page 312</p> <p>1 A. So -- and in general, I'm</p> <p>2 not -- I'm not publishing papers to say I</p> <p>3 looked at entire literature and now here I</p> <p>4 think that A causes B.</p> <p>5 You can see my 600 papers.</p> <p>6 There are few or none that worry</p> <p>7 about that type of answer, whether in the</p> <p>8 entire universe of literature there is</p> <p>9 anything like that.</p> <p>10 But when I publish papers and I</p> <p>11 need to indicate whether there is an</p> <p>12 association or not, I use exactly the same</p> <p>13 criteria.</p> <p>14 Q. Okay.</p> <p>15 A. So I never published this</p> <p>16 navigation guide before, as I mentioned to</p> <p>17 you. And again, this creates more</p> <p>18 transparency; it doesn't create less.</p> <p>19 So in a way, I give you much</p> <p>20 more opportunities to look into my job that</p> <p>21 if I didn't use this. So you have an</p> <p>22 opportunity. So you are really complaining</p> <p>23 about something that is to your advantage,</p> <p>24 not to mine.</p> <p>25 Q. Dr. Baccarelli, I still don't</p>
<p style="text-align: right;">Page 311</p> <p>1 Q. So if we looked at all your</p> <p>2 600-plus studies that have been published, we</p> <p>3 wouldn't see any publications that utilized</p> <p>4 and applied the navigation guide to reach a</p> <p>5 conclusion, correct?</p> <p>6 MR. SNIDOW: Objection to form.</p> <p>7 THE WITNESS: I think I already</p> <p>8 answered that before.</p> <p>9 QUESTIONS BY MR. MURDICA:</p> <p>10 Q. The answer is no, right?</p> <p>11 A. I can go on and repeat all the</p> <p>12 answer, or you can -- anyone can look back</p> <p>13 about the answer I just gave.</p> <p>14 Q. Can you point to any of your</p> <p>15 600 studies that utilized the navigation</p> <p>16 guide that's utilized here?</p> <p>17 A. There are many studies where</p> <p>18 expressed opinions about causation, and by</p> <p>19 doing that, I used exactly the same criteria</p> <p>20 I used in the navigation guide.</p> <p>21 Q. Oh.</p> <p>22 A. Again, the navigation guide --</p> <p>23 the navigation guide provides transparency</p> <p>24 that I don't need in my publications.</p> <p>25 Q. Okay.</p>	<p style="text-align: right;">Page 313</p> <p>1 think you answered my question.</p> <p>2 A. I did.</p> <p>3 Q. Have you published on the</p> <p>4 navigation guide?</p> <p>5 A. I did answer before. Thank</p> <p>6 you.</p> <p>7 Q. Dr. Baccarelli, have you</p> <p>8 published on the navigation guide?</p> <p>9 A. I did answer my question -- my</p> <p>10 answer is in the -- is before. If you want,</p> <p>11 I can start again.</p> <p>12 Q. If we looked at any of your</p> <p>13 publications, would we see the words</p> <p>14 "navigation guide"?</p> <p>15 A. I did answer the question</p> <p>16 before.</p> <p>17 MR. SNIDOW: Am I allowed to</p> <p>18 speak?</p> <p>19 MR. MURDICA: Are you going to</p> <p>20 have him answer or no?</p> <p>21 MR. SNIDOW: Yeah.</p> <p>22 Dr. Baccarelli, can -- you can</p> <p>23 tell him if you've ever used</p> <p>24 navigation guide and then go on to</p> <p>25 tell him if you've done GRADE.</p>

Page 314

1 But I think you can tell him
 2 if -- I think you have, by the way,
 3 three times now if you --
 4 MR. MURDICA: Depending on the
 5 question.
 6 MR. SNIDOW: -- if you've used
 7 the navigation guide in prior
 8 publications.
 9 MR. MURDICA: The pending
 10 question is, "Do the words 'navigation
 11 guide' appear in any of your 600
 12 publications?"
 13 And he refused to answer it.
 14 THE WITNESS: I did answer
 15 before. The navigation guide is not
 16 used in the previous publication.
 17 They used the word "navigation guide"
 18 in the publication.
 19 The reason is because I use the
 20 same criteria, but I'm not expected or
 21 required or even interested in provide
 22 the same level of documentation,
 23 transparency and accountability that
 24 is needed in this setting.
 25 So in preparing for this

Page 315

1 deposition, I thought I wanted to
 2 enhance accountability, enhance
 3 transparency, and enhance
 4 documentation that the document --
 5 that the navigation guide provides.
 6 And I want to say, this is
 7 something to your advantage because
 8 you can look at all the way I classify
 9 the paper. If you disagree, I'm happy
 10 to discuss.
 11 This is about disclosing. It's
 12 a way of disclosing what I did, and I
 13 disclosed it. It's helpful to
 14 everyone, I believe.
 15 MR. MURDICA: Okay.
 16 MR. SNIDOW: Definitely
 17 answered that time, right?
 18 He said the navigation guide is
 19 not --
 20 MR. MURDICA: He's wasting so
 21 much time by refusing to answer.
 22 MR. SNIDOW: He said the
 23 navigation guide is not used in a
 24 previous publication. Okay? You got
 25 what you want. I suggest you move on.

Page 316

1 MR. MURDICA: I don't think his
 2 answers are appropriate at all. I'll
 3 keep asking questions.
 4 MR. SNIDOW: Okay.
 5 QUESTIONS BY MR. MURDICA:
 6 Q. Dr. Baccarelli, you mentioned
 7 Woodruff, right?
 8 A. Uh-huh.
 9 Q. Okay. Now, when did you meet
 10 Dr. Woodruff?
 11 A. Dr. Woodruff, the first time I
 12 might have met her 15 years ago.
 13 Q. Okay.
 14 A. I think we were together
 15 working on a review of a position statement
 16 or a -- let's say a monograph published by
 17 the EPA. And we were brought together by the
 18 National Academy of Medicine in Washington,
 19 DC, to review that -- the monograph. And
 20 that was perhaps the first time I spent time
 21 with Dr. Woodruff.
 22 Q. Okay. Dr. Baccarelli, did you
 23 call Dr. Woodruff when you were attempting to
 24 apply the navigation guide of Dr. Woodruff
 25 for the first time?

Page 317

1 A. No. No.
 2 Q. Okay.
 3 A. I -- Dr. Woodruff, we never
 4 talk about the navigation guide.
 5 And Dr. Woodruff presented --
 6 we invited Dr. Woodruff for -- at Columbia,
 7 and this was during COVID, so it was a
 8 virtual visit. And Dr. Woodruff gave a
 9 presentation probably three or four years ago
 10 about the navigation -- about her work in
 11 toxicology. And that situation, probably was
 12 four years ago. She also presented about the
 13 navigation guide.
 14 And I thought it was
 15 interesting that finally GRADE was -- made it
 16 easier to work for people who work in
 17 toxicology.
 18 Q. When she gave the presentation
 19 about the navigation guide, do you recall
 20 Dr. Woodruff saying that it is a team that
 21 scores the articles under the criteria of the
 22 navigation guide, not a single person?
 23 A. I know that it has been done by
 24 teams at times, but I -- I'm not a team. I
 25 cannot clone myself.

Page 318

1 So you will understand that I
 2 cannot do it on my own -- I cannot do three
 3 times on my own. I would probably get to the
 4 same result.
 5 Q. Did you know, Dr. Baccarelli,
 6 that Dr. Woodruff was invited to sign the
 7 consensus statement we were talking about
 8 earlier and she refused?
 9 MR. SNIDOW: Objection to the
 10 form.
 11 THE WITNESS: No, I'm not aware
 12 of it, and I'm not sure she ever
 13 worked on acetaminophen. Did she?
 14 QUESTIONS BY MR. MURDICA:
 15 Q. I'm just asking if you're aware
 16 if she was invited to sign and didn't.
 17 MR. SNIDOW: Objection to the
 18 form.
 19 THE WITNESS: I'm not aware.
 20 QUESTIONS BY MR. MURDICA:
 21 Q. Okay. Have you -- one of
 22 the -- one of the main principles of the
 23 navigation guide is to avoid bias, right?
 24 A. No. One of the main principles
 25 in navigation guide is to assess bias.

Page 319

1 Q. Okay. To assess bias.
 2 According to the principles of
 3 the navigation guide, do any of them apply to
 4 the bias of the reviewer?
 5 A. Sorry, can you explain that?
 6 Q. Sure.
 7 The navigation guide is
 8 typically applied by a team, and their scores
 9 of the articles are averaged, correct?
 10 A. Correct.
 11 Q. Okay. And are the team usually
 12 paid by one side of a litigation or another?
 13 MR. SNIDOW: Objection to the
 14 form.
 15 QUESTIONS BY MR. MURDICA:
 16 Q. In application of the
 17 navigation guide?
 18 A. Again, I prepared the
 19 navigation guide. I made it transparent to
 20 you. If you think there is a bias there, you
 21 need to tell me where.
 22 Q. Well, you made your own scores,
 23 right, Dr. Baccarelli?
 24 A. I predetermined the scores
 25 before starting the navigation guide, and

Page 320

1 then I scored all the papers according to
 2 the -- to the levels of evidence. And I made
 3 it clear how I did it, so I think it's very
 4 objective.
 5 Q. Okay. So according to
 6 Dr. Baccarelli, there's no subjective
 7 elements of your scoring for any of the
 8 papers, right?
 9 A. I think you understand that
 10 every expert has subjective opinions, so I'm
 11 no different from other experts. So I have
 12 opinions. And if I'm proven to be wrong in
 13 any of my -- of the way I scored the paper,
 14 I'm happy to discuss, and I'm happy to change
 15 any score even on the spot.
 16 I have to say, the evidence is
 17 so overwhelming that you can change the score
 18 as much as you want. You can give me 200
 19 reviewers. We'll all come back with the same
 20 ideas.
 21 I mean, if you can find a
 22 reviewer who will use the navigation guide or
 23 any other tool, Bradford Hill, and disagree
 24 with it, you will have to ask for an entire
 25 list of papers and show -- let's say someone

Page 321

1 who doesn't know the literature or
 2 misinterpret the literature says there is no
 3 consistency. I would doubt the sanity of
 4 that person because there is huge consistency
 5 across the literature.
 6 So, I mean, it's possible
 7 someone might do that, but I will worry about
 8 that.
 9 Q. Did I ask you that,
 10 Dr. Baccarelli?
 11 MR. SNIDOW: Objection to the
 12 form.
 13 THE WITNESS: I just thought I
 14 would offer --
 15 QUESTIONS BY MR. MURDICA:
 16 Q. Okay.
 17 A. -- if you wouldn't mind.
 18 Q. Well, I do, because I only have
 19 a limited amount of time. So I'd like to get
 20 my questions in, please.
 21 A. We professors tend to speak a
 22 lot.
 23 Q. Yeah.
 24 One of the first things that
 25 you reviewed in this litigation was a

Page 322

1 production by the United States Food and Drug
2 Administration, correct?

3 A. I reviewed those productions at
4 some point, yeah.

5 Q. Yeah.

6 And you saw that they also
7 assessed the literature, correct?

8 A. They definitely report on the
9 literature.

10 Q. And their conclusion was more
11 along the lines of what you believed in 2019
12 when you published the Laue article, correct?

13 MR. SNIDOW: Object to form.

14 THE WITNESS: I don't recall
15 that. I don't think there is anything
16 to that effect.

17 The -- the production was
18 redacted. I really don't know what is
19 their conclusion. They -- I was
20 really -- it was interesting to me
21 because they seem to worry. And the
22 reason why they were looking at it is
23 because they're concerned.

24 I don't think there was a
25 conclusion on that.

Page 323

1 QUESTIONS BY MR. MURDICA:

2 Q. Okay. Did you see anything in
3 that production that you remember where FDA
4 made the same determination you did, that the
5 relationship is causal?

6 A. So I'm used to work on the
7 literature. I worked on the primary
8 literature. I don't want to be biased by any
9 other body one way or another.

10 I was asked to give an opinion
11 based on the literature. I, as you say, say
12 in my report I haven't taken into account the
13 FDA production one way or another.

14 Q. Okay. And would the same thing
15 apply to any company documents, the
16 defendants' production?

17 A. Correct. I have to say, all
18 these materials were very important to me
19 because it help me to make sure I considered
20 any possible concern. And I did.

21 So there were a lot of concerns
22 that were raised by the FDA, were raised by
23 Johnson & Johnson, and I was able to address
24 those concerns so they're no longer a
25 concern. The literature is bulletproof.

Page 324

1 Q. So you're relying on the
2 literature, not on any of the FDA documents
3 or the defendants' own documents, correct?

4 A. My opinion, as it stand, is not
5 used on some -- it's not based on someone
6 else's opinion. So if you're asking me
7 whether I base my opinion on the opinion of
8 FDA, Johnson & Johnson, the opinion of the
9 lawyers, the opinion of my colleagues, I
10 based my assessment on exactly the
11 literature.

12 I reviewed the papers. I --
13 it's much easier to rely on someone else's
14 opinion. It's much harder to do what I did,
15 to look at all the papers one by one.

16 Q. Dr. Baccarelli, when is the
17 last time that you looked at Dr. Woodruff's
18 original 2014 publication of the navigation
19 guide?

20 A. Probably when I started to do
21 this work. Let's say in April.

22 Q. Okay. And did you say April?

23 A. April 2013 {sic}.

24 Q. Did you do the navigation guide
25 analysis first before you did Bradford Hill?

Page 325

1 A. I -- so the way -- the way it
2 is, I started with doing both, so I sat down
3 all the criteria how I was going to grade
4 each of the papers a priori, as requested by
5 the navigation guide. So I wrote down the
6 criteria about the navigation guide, all the
7 criteria for Bradford Hill, and then I
8 started to work this through.

9 Of course the navigation guide
10 requires that each paper -- you can see the
11 tables at the end of my report. The
12 navigation guide that requires that -- let me
13 get this.

14 So the request that while I
15 read the papers, I put them in these tables.
16 So I need to ask questions about selection,
17 about exposure outcomes, confounding,
18 incomplete outcomes, selective outcome
19 reporting, et cetera.

20 Then we need to add a table
21 with all the information and then one about
22 the evidence, which is sample size, large
23 effect, dose response, internal consistency,
24 control of bias, et cetera, et cetera.

25 So the navigation guide is a

<p style="text-align: right;">Page 326</p> <p>1 process where I document all of the papers 2 and I put them down. And then of course the 3 Bradford Hill analysis comes along. 4 Essentially the Bradford Hill 5 analysis and the navigation guides are the 6 same process. They use the same criteria. 7 You would recognize many of the Bradford Hill 8 criteria here. So I could have used either 9 or both. 10 I would be surprised if the -- 11 someone doing the navigation guide analysis 12 would come with a different conclusion 13 because of Bradford Hill, because they are 14 similar -- they are similar processes. 15 The navigation guide, though, 16 allowed me to document. Again, the 17 navigation guide is not -- is not a way to 18 get an answer. It's a way to document the 19 process. 20 Q. Dr. Baccarelli, your Bradford 21 Hill analysis relies on your navigation guide 22 scoring of the studies, correct? 23 A. No, that is not true. 24 Q. Okay. 25 A. The Bradford Hill analysis</p>	<p style="text-align: right;">Page 328</p> <p>1 Q. You did not use the navigation 2 guide scoring in your Bradford Hill analysis, 3 correct? 4 MR. SNIDOW: Objection to form. 5 THE WITNESS: In the Bradford 6 Hill analysis, of course the same -- 7 the same components that are in the 8 navigation guide end up in the 9 Bradford Hill analysis. So as I said, 10 they're essentially the same process. 11 One makes this -- the Bradford 12 Hill analysis clear and transparent, 13 the navigation guide. They're 14 essentially the same process. So the 15 navigation guide is like a more 16 documented, more expanded Bradford 17 Hill analysis. 18 QUESTIONS BY MR. MURDICA: 19 Q. So, Doctor, if you got a study 20 wrong in your scoring in the navigation 21 guide, that would have affected your Bradford 22 Hill analysis, correct? 23 MR. SNIDOW: Objection to form. 24 THE WITNESS: No. There is not 25 one single scoring that can change the</p>
<p style="text-align: right;">Page 327</p> <p>1 relies on the nine criteria of Bradford Hill. 2 So I reviewed the nine criteria, and I -- and 3 I -- and I concluded that it -- that in 4 parallel to the navigation guide. 5 Q. Okay. So each one, the 6 navigation guide analysis and the Bradford 7 Hill analysis, are separate and apart from 8 each other, right, Dr. Baccarelli? 9 A. That's -- you can understand 10 very well that that is not true because the 11 papers are the same, so they cannot be 12 separate from each other. They are just two 13 processes that follow similar criteria, and I 14 will be surprised if you use one of the other 15 you would have different results. 16 Bradford Hill simply doesn't 17 require the same level of transparency and 18 accountability the navigation guide allows. 19 So the navigation guide essentially is a way 20 to make the Bradford Hill analysis 21 transparent. 22 Q. Okay. So I just want to be 23 clear, because I don't think you've answered 24 my question, Doctor. 25 A. I said no.</p>	<p style="text-align: right;">Page 329</p> <p>1 navigation guide or the Bradford Hill. 2 In order to change my opinion 3 on the navigation guide, I would have 4 to get half of the scoring wrong. 5 To be honest, the evidence is 6 so overwhelming that it really takes a 7 lot of mistakes to really change my 8 opinion for Bradford Hill. 9 And if you can find one score 10 that is wrong, that's okay. I mean, 11 I'm not perfect. I know that I can 12 make mistakes. Most of us do. 13 QUESTIONS BY MR. MURDICA: 14 Q. So your testimony then is the 15 navigation guide analysis is separate, apart 16 and independent from your Bradford Hill 17 analysis, correct? 18 MR. SNIDOW: Objection to form. 19 THE WITNESS: They are two -- 20 these two are running parallel. They 21 are very similar. Some of the 22 criterias of the Bradford Hill 23 analysis are also included in the 24 navigation guide and vice versa. 25 I ran the Bradford Hill</p>

<p style="text-align: right;">Page 330</p> <p>1 analysis first, if I remember 2 correctly, and I reached -- I reached 3 some -- I ran the Bradford Hill 4 analysis, and I reached some 5 conclusions. And then I ran the 6 navigation guide at a -- I reached 7 some conclusion. 8 I need to point out it's the 9 same type of studies, and it's me 10 doing both. So I think it's pretty -- 11 it's pretty clear that the two 12 processes are interrelated. 13 QUESTIONS BY MR. MURDICA: 14 Q. Okay. So, Dr. Baccarelli, you 15 reached your Bradford Hill conclusion first, 16 and then you reached your navigation guide 17 conclusion second, correct? 18 A. At the same time -- yeah, about 19 the same. I'm not sure at this point, 20 really. 21 Q. And both of those conclusions 22 came in April 2023? 23 A. They came along the process. I 24 can't remember. I mean, I really did this in 25 March or April, so I had -- I made this</p>	<p style="text-align: right;">Page 332</p> <p>1 observational studies. 2 Q. Did you see when you reviewed 3 the navigation guide that it's -- it was 4 intended to be done -- to be performed by 5 government agencies, professional societies, 6 health care organizations, to analyze 7 relationships between environmental exposures 8 and outcomes? 9 A. And me. Correct? 10 I don't want to say I'm an 11 organization, but I would say that if 12 government organization rely on this -- 13 Q. Dr. Baccarelli -- 14 A. -- it's actually -- it's 15 actually -- it applies also to me, correct? 16 I think I can -- I'm rising to 17 the standards of government organizations. 18 It's pretty flattering, actually, you're 19 saying that. 20 Q. Dr. Baccarelli, are you aware 21 of anyone individually doing a navigation 22 guide analysis per the guide before? 23 MR. SNIDOW: Objection. Form. 24 THE WITNESS: Say that again? 25</p>
<p style="text-align: right;">Page 331</p> <p>1 conclusion in my mind the problem existed 2 before. Like in 2022 and 2021, I was pretty 3 sure there was a problem. 4 When I started to do these -- 5 these tables are actually pretty helpful, 6 because when you finish and you step back, 7 you see, I didn't expect this to be so 8 consistent. I was blown away by this table. 9 This table really blew me away for how 10 consistent they are. 11 There is really very little 12 example in the epidemiology literature of 13 studies that are so consistent with each 14 other that they help understand and read out 15 a situation so clearly. 16 You asked me whether this can 17 be subjective. This cannot be subjective. 18 And honestly, this is why I have the tables, 19 because anyone who reads these tables can 20 reach my own conclusion. 21 Q. Have you ever worked with 22 prospective, double-blinded data, Doctor? In 23 epidemiology? 24 A. In epidemiology, as you know, 25 it's very unusual. In epidemiology,</p>	<p style="text-align: right;">Page 333</p> <p>1 QUESTIONS BY MR. MURDICA: 2 Q. Are you aware of any individual 3 like yourself performing and publishing a 4 navigation guide analysis before? 5 A. Again, I'm -- this really makes 6 me even more convinced your comment, that if 7 it were true, and perhaps you're right, if 8 I'm the first one to use it, I should get a 9 gold medal because I did a lot of work to 10 make it transparent to you and to help you to 11 understand that what I'm saying is true. And 12 the judge, of course. 13 So probably what you're saying, 14 that this standard of rigor and transparency 15 are used is unusual for the scientist. And I 16 feel you're commending me for using a higher 17 level of transparency. 18 Q. I'm sure that that's what you 19 think I meant. 20 What I'm asking you, Doctor, is 21 whether you're aware of an individual 22 performing a navigation guide analysis 23 before -- while you know that the navigation 24 guide says that it is meant to be applied by 25 a team and to average the scores so that you</p>

<p>Page 334</p> <p>1 get multiple points of input and not one 2 person's analysis in case they're biased, 3 right?</p> <p>4 MR. SNIDOW: Objection. 5 Objection to the form.</p> <p>6 THE WITNESS: Again, I -- you 7 just said that usually individuals 8 don't do that because it's run by 9 organizations.</p> <p>10 I'm saying by doing the 11 navigation analysis, I held myself to 12 the highest possible standard. It is 13 usually done by a government or an 14 agency.</p> <p>15 And again, I disclosed my 16 criteria, I disclosed my opinions, 17 something, by the way, that the 18 epidemiologists you used didn't. And 19 so I make my opinion transparent, 20 which is not something I can say about 21 you.</p> <p>22 So if you are saying I'm 23 biased, I eliminated a lot of space 24 where I can be biased because I gave 25 it to you, all my scoring. So if</p>	<p>Page 336</p> <p>1 scoring.</p> <p>2 A. Fantastic.</p> <p>3 Q. Doctor, I'm going to ask you 4 about -- you have a website for your group at 5 Columbia, right?</p> <p>6 A. I have a website for my lab.</p> <p>7 Q. Right.</p> <p>8 And your lab's website talks 9 about some of the things that you're 10 investigating, right?</p> <p>11 A. Very, very generally.</p> <p>12 Q. Very generally.</p> <p>13 But it does identify some 14 things, right? Pollutants?</p> <p>15 A. Very little.</p> <p>16 Q. Okay. It doesn't say 17 acetaminophen, right?</p> <p>18 A. Acetaminophen is one of the 19 chemicals we use. I'm sure we say 20 "chemicals."</p> <p>21 Q. Okay. But you know it doesn't 22 say acetaminophen, right?</p> <p>23 MR. SNIDOW: Objection to form.</p> <p>24 THE WITNESS: I publish 650 25 papers. About four on acetaminophen,</p>
<p>Page 335</p> <p>1 there is a way to show that I'm not 2 biased, this is the way.</p> <p>3 And the navigation guide is -- 4 I used the navigation guide exactly to 5 show that is the data, not me.</p> <p>6 QUESTIONS BY MR. MURDICA:</p> <p>7 Q. Okay. Are you aware, 8 Dr. Baccarelli, that the drafters of the 9 navigation guide say that assessing the risk 10 of bias needs to be independently determined 11 by multiple investigators?</p> <p>12 MR. SNIDOW: Objection to form.</p> <p>13 THE WITNESS: And again, I did 14 the risk of bias, and I documented 15 this. So again, I think you -- if you 16 have any reason to think my navigation 17 guide is biased or wrong, I'm happy to 18 discuss.</p> <p>19 I'm disclosing you the data and 20 my reasoning. I'm not hiding it. 21 It's exactly the opposite of what you 22 seem to discuss, to suggest.</p> <p>23 QUESTIONS BY MR. MURDICA:</p> <p>24 Q. Don't worry, Doctor, we're 25 going to go through your -- through your</p>	<p>Page 337</p> <p>1 and you can see that in my CV.</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. One of the things that you 4 assessed in your navigation guide analysis 5 was sample size, right?</p> <p>6 A. Correct.</p> <p>7 Q. And you're critical of some 8 studies over sample size, right?</p> <p>9 A. I'm not critical. I'm 10 assessing them, and I explain the criteria in 11 my -- that are predetermined in my navigation 12 guide analysis.</p> <p>13 Q. What was the sample size of the 14 population in Baker 2020 that had 15 acetaminophen exposure and ADHD?</p> <p>16 MR. SNIDOW: Object to the 17 form.</p> <p>18 THE WITNESS: I'm happy to -- I 19 can't remember in the top of my mind. 20 If you have the paper, I'm happy to 21 discuss.</p> <p>22 QUESTIONS BY MR. MURDICA:</p> <p>23 Q. Well, the GESTE cohort --</p> <p>24 A. GESTE.</p> <p>25 Q. GESTE cohort only had 394</p>

Page 338

1 meconium samples, right?

2 A. Correct.

3 Q. So it had to be less than 394,

4 right?

5 MR. SNIDOW: Object to form.

6 THE WITNESS: Maybe about that.

7 If you have the paper, we can start to

8 discuss it.

9 QUESTIONS BY MR. MURDICA:

10 Q. Yeah. I'm going to ask you

11 generally about GESTE first, and then we'll

12 get into it.

13 MR. SNIDOW: Object to the

14 form.

15 QUESTIONS BY MR. MURDICA:

16 Q. GESTE originally had 400

17 samples, and six of them weren't returned,

18 right?

19 MR. SNIDOW: Object to the

20 form.

21 THE WITNESS: I'll be happy to

22 discuss the paper.

23 QUESTIONS BY MR. MURDICA:

24 Q. It's not in the paper. I'm

25 just asking if you -- you know that this

Page 339

1 cohort has been used for multiple papers by

2 you and your colleagues, right?

3 MR. SNIDOW: Object to the

4 form.

5 THE WITNESS: Can -- I'm not

6 sure I understand the question.

7 QUESTIONS BY MR. MURDICA:

8 Q. Sure.

9 GESTE is one grouping of

10 samples collected in Sherbrooke, Canada,

11 right?

12 A. No. It's a prospective study

13 of women and their children, follow-up

14 longitudinally for 12 years. It's not a

15 group of samples.

16 Q. Well, the meconium samples were

17 collected from 394 of them, correct?

18 MR. SNIDOW: Object to form.

19 THE WITNESS: I'd be happy to

20 review the paper if you're interested

21 in -- exactly in the Baker 2020.

22 QUESTIONS BY MR. MURDICA:

23 Q. I don't know what paper you

24 want me to give you, Doctor. I'm asking you

25 about GESTE, from which you've published

Page 340

1 multiple papers.

2 A. You mentioned Baker, I didn't.

3 Q. Right.

4 A. Baker 2020.

5 Q. I'm asking about GESTE.

6 A. Uh-huh.

7 Q. Okay. You don't recall how

8 many meconium samples are in inventory from

9 the GESTE study?

10 MR. SNIDOW: Objection to the

11 form.

12 THE WITNESS: It seems to be --

13 I mean, I'm happy to review what --

14 the analysis specifically, but it

15 seems to be the right -- 394 seems to

16 be the right number.

17 QUESTIONS BY MR. MURDICA:

18 Q. Okay. And some portion over

19 50 percent, I think you testified earlier,

20 had acetaminophen exposure in the meconium,

21 right?

22 MR. SNIDOW: Object to form.

23 THE WITNESS: 55 percent had

24 detectable levels. Among those

25 55 percent, there is a range of

Page 341

1 exposure from very low to very high

2 and everything in between. So it's

3 not just the exposure, but there's --

4 there's not just yes or no, but there

5 is also a level.

6 QUESTIONS BY MR. MURDICA:

7 Q. Okay. So 55 percent, roughly

8 200 of 394, maybe a little more, had exposure

9 to acetaminophen --

10 MR. SNIDOW: Objection.

11 QUESTIONS BY MR. MURDICA:

12 Q. -- according to meconium,

13 right?

14 MR. SNIDOW: Objection to form.

15 THE WITNESS: I really don't

16 understand the word -- what is this

17 question? Can you repeat it?

18 QUESTIONS BY MR. MURDICA:

19 Q. Okay. What's 55 percent of

20 394?

21 MR. SNIDOW: Objection to the

22 form.

23 THE WITNESS: I'm sure that

24 it's in the paper. If you want to

25 look at the paper, they're in the

<p style="text-align: right;">Page 342</p> <p>1 paper --</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. I don't know which paper you</p> <p>4 want me to give you, Doctor.</p> <p>5 A. I don't know what answer you</p> <p>6 want to give me.</p> <p>7 MR. SNIDOW: Hold on. Hold on.</p> <p>8 I've been extremely</p> <p>9 well-behaved. The reason he's</p> <p>10 confused is because you mentioned</p> <p>11 Baker, and now he'd like to see Baker.</p> <p>12 MR. MURDICA: That was a long</p> <p>13 time ago --</p> <p>14 MR. SNIDOW: Do you want to</p> <p>15 show it to him?</p> <p>16 MR. MURDICA: -- and it's not</p> <p>17 what I'm asking about. I'm not asking</p> <p>18 about Baker.</p> <p>19 THE WITNESS: You did.</p> <p>20 MR. MURDICA: I just told you</p> <p>21 I'm not asking about Baker, Doctor.</p> <p>22 Do you need a break?</p> <p>23 THE WITNESS: No, no, we can</p> <p>24 go.</p> <p>25 What time is it?</p>	<p style="text-align: right;">Page 344</p> <p>1 10.</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. Doctor, you've published</p> <p>4 multiple things from the GESTE cohort, right?</p> <p>5 A. Uh-huh.</p> <p>6 Q. Okay. 55 percent of the</p> <p>7 samples of meconium had acetaminophen in</p> <p>8 them, right?</p> <p>9 MR. SNIDOW: Objection to the</p> <p>10 form.</p> <p>11 THE WITNESS: So there was an</p> <p>12 entirety of, let's say, 400 people</p> <p>13 with meconium. 400 children had</p> <p>14 meconium and also had follow-up at</p> <p>15 12 years, 10, 12 years.</p> <p>16 All of this did that</p> <p>17 informally. You understand the sample</p> <p>18 size is the total people, not just the</p> <p>19 ones that had meconium -- that have</p> <p>20 acetaminophen in meconium. All of</p> <p>21 them are in the analysis, so we are</p> <p>22 considering two things, whether there</p> <p>23 are meconium -- acetaminophen in</p> <p>24 meconium or not and the levels.</p> <p>25 So the entire -- the entire</p>
<p style="text-align: right;">Page 343</p> <p>1 MR. SNIDOW: It's 3:04.</p> <p>2 Are you going to show him</p> <p>3 Baker? Do you have Baker?</p> <p>4 MR. MURDICA: Eventually.</p> <p>5 MR. SNIDOW: Okay.</p> <p>6 MR. MURDICA: When I'm going to</p> <p>7 ask questions about it.</p> <p>8 MR. SNIDOW: All right. All</p> <p>9 right.</p> <p>10 MR. MURDICA: But right now you</p> <p>11 guys are wasting my time.</p> <p>12 Why don't you take a break. If</p> <p>13 you want to look at Baker -- I'm not</p> <p>14 asking about Baker. But why don't you</p> <p>15 guys take a break and look at Baker.</p> <p>16 MR. SNIDOW: Wait. Sorry. Do</p> <p>17 you need a break?</p> <p>18 THE WITNESS: I'm okay.</p> <p>19 MR. SNIDOW: All right. You</p> <p>20 keep asking questions.</p> <p>21 MR. MURDICA: Okay. Let's try</p> <p>22 to answer them, though, because now</p> <p>23 you've just wasted ten minutes of my</p> <p>24 time.</p> <p>25 MR. SNIDOW: At most, a minute,</p>	<p style="text-align: right;">Page 345</p> <p>1 sample size is everyone who has</p> <p>2 meconium. It's not just the people</p> <p>3 who are positive. The people who are</p> <p>4 positive are compared to the ones that</p> <p>5 are negative for meconium.</p> <p>6 Does it make sense?</p> <p>7 QUESTIONS BY MR. MURDICA:</p> <p>8 Q. I understand, Doctor.</p> <p>9 A. Okay.</p> <p>10 Q. My question that I was trying</p> <p>11 to establish is that the meconium -- the</p> <p>12 acetaminophen-positive meconium samples are</p> <p>13 55 percent of approximately 394, right?</p> <p>14 A. Correct.</p> <p>15 MR. SNIDOW: Objection to the</p> <p>16 form.</p> <p>17 QUESTIONS BY MR. MURDICA:</p> <p>18 Q. And I asked you if you could</p> <p>19 either do the math or agree with me that</p> <p>20 that's a little over 200 samples.</p> <p>21 A. So there are a little over 200</p> <p>22 samples that get compared to a little over --</p> <p>23 a little less than 200 samples in the entire</p> <p>24 study. It's what is said in the paper, and</p> <p>25 I'm happy to review the paper with you again.</p>

Page 346

1 Q. And a portion of those, both
2 with and without acetaminophen, have
3 diagnoses of different neurodevelopmental
4 outcomes, right?

5 A. Sorry. You are talking about
6 Baker. It's the only paper where we
7 published these results. So I would like to
8 discuss Baker.

9 Q. Okay. You can have a break,
10 Doctor.

11 MR. SNIDOW: No, he wants you
12 to show him the paper. He doesn't
13 want a break.

14 MR. MURDICA: You've taken
15 whatever papers you wanted in front of
16 you -- yeah.

17 THE WITNESS: No, if you want
18 to discuss Baker, we should discuss
19 Baker.

20 MR. MURDICA: I'm discussing
21 the GESTE cohort.
22 I conduct this deposition, not
23 you, Doctor.

24 THE WITNESS: I -- I --
25 MR. MURDICA: We're going off

Page 347

1 the record. I need to talk to your
2 counsel.

3 VIDEOGRAPHER: The time right
4 is now 3:07 p.m. We are off the
5 record.
6 (Off the record at 3:07 p.m.)

7 VIDEOGRAPHER: The time right
8 now is 3:16 p.m. We are back on the
9 record.
10 (Baccarelli Exhibit 99 marked
11 for identification.)

12 QUESTIONS BY MR. MURDICA:

13 Q. Dr. Baccarelli, you have in
14 front of you what's been marked as
15 Exhibit 99.

16 Do you recognize that as your
17 amended report?

18 A. Yeah, this seems to be it.

19 Q. Will you please turn to
20 page 15?

21 A. Yeah.

22 Q. Sorry, Doctor, I'm trying to
23 find something here.

24 I understand on the break you
25 took a look at Baker 2020.

Page 348

1 A. Just a little bit.

2 Q. Okay. And was that marked?

3 A. No. It's here though.
4 (Baccarelli Exhibit 100 marked
5 for identification.)

6 QUESTIONS BY MR. MURDICA:

7 Q. Okay. So we'll mark that as
8 Exhibit 100.

9 Doctor, part of Baker 2020 --
10 you were involved in it, right?

11 A. That is correct.

12 Q. Okay. Part of it was an MRI
13 analysis, right?

14 A. That is correct.

15 Q. Do you recall how many MRIs
16 were conducted at the time?

17 A. It was a small subset of the
18 population.

19 Q. And those --

20 A. 45, 50. I can't remember
21 exactly.

22 Q. The MRIs were of the
23 children --

24 A. Of the children.

25 Q. -- who at this point were now

Page 349

1 10 or 12, right?

2 A. Correct.

3 Q. And --

4 A. 10 or 12 years old.

5 Q. Yes.

6 And part of the protocol was
7 that the children had to be off their ADHD
8 medication that day when they had their MRI,
9 right?

10 A. Correct. That is something
11 that our neuropsychologist, Dr. Posner, who
12 is an expert on ADHD -- he does that for a
13 living -- suggested that we had the kids off
14 medication because that will make the MRI
15 more accurate.

16 Q. Right.

17 Because the medication itself
18 could show that -- the brain connectivity,
19 right?

20 A. That is what I understand.

21 Q. Okay. At the time Baker 2020
22 was published, you actually had a lot more
23 MRIs, right?

24 A. It is possible that we had more
25 MRIs, but I'm not sure. I'm not sure what

Page 350

1 was the situation there.

2 Q. Okay.

3 A. I'm sure we put all the MRIs

4 for which we had complete data. This is not

5 a subset of MRI. All the MRI that were

6 eligible for the study, meaning we had

7 complete data to do the analysis we did here,

8 we don't withhold any MRI.

9 Q. You sure about that?

10 A. I'm pretty sure.

11 Q. Okay. How many MRIs do you

12 have done today?

13 A. I can't remember.

14 Q. Okay.

15 A. I think it's 100 in total

16 today.

17 Q. Okay. Do you --

18 A. I can't remember exactly.

19 Q. Do you know, Dr. Baccarelli, if

20 that continued? The MR -- accumulating MRIs

21 continued following this publication?

22 A. Unfortunately, the -- we had

23 problems during COVID because we couldn't do

24 any more MRIs. And therefore, we are not

25 doing them anymore right now. This study --

Page 351

1 this study is finished. The MRI study is

2 finished.

3 Q. Okay. Did you -- have you done

4 a new analysis now that you have 100 or so

5 MRIs?

6 A. This is the complete MRI

7 subset. What we have now -- what is here is

8 what the MRIs we have. It is what I

9 understand.

10 Q. So if you have 100 MRIs now,

11 they're all represented in the Baker 2020

12 publication?

13 A. These are the MRIs that have

14 complete data. I understand that these are

15 all of it. There is a -- yeah, these are all

16 the -- the follow-up was -- was almost

17 complete at this time, so it's almost every

18 one.

19 Q. Okay. Do you know anything --

20 back to MRIs and the cessation of the

21 medication for the day of the MRI.

22 Do you know what medication was

23 recorded about the child as to the medication

24 that they were normally on?

25 A. I'm pretty sure we have all of

Page 352

1 it.

2 Q. Okay. And do you know if their

3 last use was the night before or the morning

4 before the MRI or otherwise?

5 A. So you just said that we had

6 them all for one day?

7 Q. The day of MRI.

8 A. For the day of the MRI.

9 I'm pretty sure that what the

10 protocol said was that to be off for

11 24 hours. We asked them to have not for

12 24 hours.

13 I might be wrong about that,

14 but at the same time, I mean, that is -- that

15 is what I remember.

16 Q. Okay. When you were just

17 reviewing Baker 2020, which has been marked

18 as Exhibit 100 --

19 A. Yeah.

20 Q. -- do you recall seeing a

21 protocol that the children had to be off

22 their medication for 24 hours?

23 A. I don't remember. If you can

24 point me out -- by the way, these are two

25 different formats again. You have one

Page 353

1 format, I have another. So if you want to

2 point out stuff -- yeah, thank you.

3 MR. SNIDOW: You want to

4 re-mark it then or what?

5 MR. MURDICA: No, he's --

6 THE WITNESS: I have the PDF.

7 You have -- you are looking at the --

8 QUESTIONS BY MR. MURDICA:

9 Q. Yeah. That's okay. I have

10 nowhere to point you.

11 I'm asking you if you -- you

12 know, if you see anywhere --

13 A. I thought it was 24 hours, but

14 honestly, I -- it might be the same day.

15 And again, we could have done

16 it with the drugs, but we did without because

17 we thought that would make it more sensitive.

18 Q. Do you know the half-life of

19 Adderall, for example?

20 A. A few hours.

21 Q. It's not 12 hours; it's at few

22 hours?

23 A. Yeah. 12 hours.

24 Q. Okay. So if it's 12 hours and

25 the child had their medication the night

<p style="text-align: right;">Page 354</p> <p>1 before the MRI, the medication could still be</p> <p>2 present, right? Half of it?</p> <p>3 A. Of course. Of course. But</p> <p>4 that wouldn't worry me at all.</p> <p>5 Q. Okay. So if you look at the</p> <p>6 study itself now, this was -- you were listed</p> <p>7 as a supervisor, right?</p> <p>8 A. I was listed as the last</p> <p>9 author.</p> <p>10 Q. Okay. Well, let me see if your</p> <p>11 version says that.</p> <p>12 (Baccarelli Exhibit 101 marked</p> <p>13 for identification.)</p> <p>14 QUESTIONS BY MR. MURDICA:</p> <p>15 Q. All right. I'm going to mark</p> <p>16 an online version.</p> <p>17 A. Thank you.</p> <p>18 Q. Okay, Doctor. Now on</p> <p>19 Exhibit 101, you see there's a few extra</p> <p>20 things here about funding and drafting?</p> <p>21 A. Yeah, I see it.</p> <p>22 MR. SNIDOW: Jim, do you have</p> <p>23 one for me?</p> <p>24 MR. MURDICA: Yes.</p> <p>25 MR. SNIDOW: If not, it's okay.</p>	<p style="text-align: right;">Page 356</p> <p>1 of interest section?</p> <p>2 A. Okay.</p> <p>3 Q. Do you see Dr. Posner lists</p> <p>4 receiving consultancy fees from Innovative</p> <p>5 Science Corporation?</p> <p>6 A. Okay.</p> <p>7 Q. All right. You see that,</p> <p>8 right?</p> <p>9 A. It is there.</p> <p>10 Q. And you agree that's</p> <p>11 appropriate, to list as potential conflicts</p> <p>12 of interest any consultancy fees that the</p> <p>13 scientists are receiving from a third party,</p> <p>14 correct?</p> <p>15 A. Only if related to the work</p> <p>16 that is being -- that is being discussed.</p> <p>17 Not all -- not everything -- any money you</p> <p>18 get in the world. Only if it can represent a</p> <p>19 potential conflict of interest.</p> <p>20 Q. Okay. And this study is about</p> <p>21 ADHD, right?</p> <p>22 A. Correct.</p> <p>23 Q. I'm sorry?</p> <p>24 A. Yes, that's correct.</p> <p>25 Q. Okay. Not about autism, right?</p>
<p style="text-align: right;">Page 355</p> <p>1 MR. MURDICA: Actually, I</p> <p>2 don't.</p> <p>3 MR. SNIDOW: Yeah. It's --</p> <p>4 MR. MURDICA: I believe it's</p> <p>5 been previously marked as Exhibit 19</p> <p>6 as well.</p> <p>7 MR. SNIDOW: Okay. Thanks.</p> <p>8 QUESTIONS BY MR. MURDICA:</p> <p>9 Q. And you're listed as a</p> <p>10 supervisor?</p> <p>11 A. Exactly. I can explain exactly</p> <p>12 why.</p> <p>13 There is a doctor -- there are</p> <p>14 three supervisors: Dr. Bellenger, who was an</p> <p>15 expert in meconium; Dr. Posner, who was a</p> <p>16 neuropsychiatrist, and his expertise all of</p> <p>17 his life, works on brain MRIs and ADHD; and</p> <p>18 Dr. Baccarelli, the epidemiologist.</p> <p>19 So I'm the supervisor of</p> <p>20 epidemiology. Dr. Posner is the supervisor</p> <p>21 of brain MRIs.</p> <p>22 Q. And my question was just</p> <p>23 whether you're listed as a supervisor, and</p> <p>24 you are, correct?</p> <p>25 Doctor, do you see the conflict</p>	<p style="text-align: right;">Page 357</p> <p>1 A. The study is about ADHD,</p> <p>2 absolutely.</p> <p>3 Q. Okay. So if we look at</p> <p>4 results, you see some numbers here.</p> <p>5 Acetaminophen was detected in</p> <p>6 199 meconium samples, right?</p> <p>7 A. Where are you looking?</p> <p>8 Q. Results, page 4.</p> <p>9 A. Results, page 4. Okay. So</p> <p>10 there are 355 children, which is the entire</p> <p>11 sample size, and 199 had meconium. Okay.</p> <p>12 Q. 199 had meconium with</p> <p>13 acetaminophen --</p> <p>14 A. With acetaminophen, correct.</p> <p>15 Q. Okay. But you're also looking</p> <p>16 for a diagnosis of ADHD, right?</p> <p>17 A. Correct.</p> <p>18 Q. And only 33 children had both.</p> <p>19 Only 33 children had an ADHD diagnosis,</p> <p>20 whether there was acetaminophen or not in</p> <p>21 their meconium, right?</p> <p>22 A. There are 33 children, which is</p> <p>23 about 10 percent. Very consistent with the</p> <p>24 prevalence in -- so we have 33 children in</p> <p>25 345. All 345.</p>

Page 358

1 I want to point out that
 2 meconium, because it's a -- it's valuable,
 3 this number, provides a higher power than
 4 yes/no. So it's really important to point
 5 out this is a difference.
 6 And also, you will understand
 7 that power is not just a function of sample
 8 size but also the expected relative risk. So
 9 that's really important to keep in mind.
 10 Q. And you're saying that, Doctor,
 11 because 33 sounds like a small sample size,
 12 right?
 13 MR. SNIDOW: Objection to form.
 14 THE WITNESS: No. I use that
 15 because that sample size is smaller
 16 than some of the studies that are in
 17 the literature. But I want to point
 18 out that we have an advantage here,
 19 that we are measuring -- we are
 20 measuring the exposure in meconium,
 21 which is expected to be more proximal
 22 to the outcome. And those are
 23 expected to be more accurate, reflects
 24 the entire pregnancy and therefore we
 25 would expect to have a higher relative

Page 359

1 risk than the previous studies.
 2 So if you ever -- you expect a
 3 higher relative risk, you can conduct
 4 a study with a smaller sample size,
 5 and that is going to be informative.
 6 QUESTIONS BY MR. MURDICA:
 7 Q. And you were critical of Laue
 8 for having 115 sample size, right?
 9 A. So it's four times smaller,
 10 looking at intelligence. It's four times
 11 smaller.
 12 Q. If you turn to page 5.
 13 A. Uh-huh.
 14 Q. The paragraph that begins with
 15 the word "despite." If you look at the third
 16 sentence, it says, "No single observational
 17 study is sufficient for a causal inference."
 18 Do you see those words?
 19 A. What is it?
 20 Q. Where is it, or what is it?
 21 A. Yeah. "No single observational
 22 study is sufficient for causal inference."
 23 Q. Right.
 24 Do you remember fighting me on
 25 that earlier?

Page 360

1 MR. SNIDOW: Objection to the
 2 form.
 3 QUESTIONS BY MR. MURDICA:
 4 Q. These are your words, right?
 5 MR. SNIDOW: Objection to form.
 6 THE WITNESS: I don't remember
 7 that. I really -- I really -- I
 8 believe I agree with the idea that you
 9 need many studies to --
 10 QUESTIONS BY MR. MURDICA:
 11 Q. Okay.
 12 A. -- to get causal inference.
 13 Q. So these are your words. "No
 14 single observational study is sufficient for
 15 causal inference."
 16 Correct?
 17 A. I think that is what every
 18 epidemiologist will tell you, and I will
 19 stand by those sentences.
 20 Q. Okay. And more observational
 21 studies using direct measurements of fetal
 22 acetaminophen exposure are needed, correct?
 23 A. That is really a very nice
 24 desire. At the same time, I mean, we would
 25 love to do that, but the literature at this

Page 361

1 point, three years after the fact, maybe
 2 four years because this paper was probably
 3 written in 2019, the evidence is so
 4 overwhelming that if I had to write this
 5 today, I probably would say it would be nice
 6 to have another study like this. But there
 7 is enough, really, to prove causation.
 8 Q. At this point in 2020 when this
 9 was published, you believed and stood by the
 10 words in here, correct?
 11 A. I -- again, I believed that it
 12 would be helpful to have another study like
 13 this. At the same time, I didn't say there
 14 is no causal evidence unless this is done.
 15 And by the way, at the time, I
 16 didn't know the existence of Ji, et al. Ji,
 17 et al., is a study also that uses biomarkers.
 18 So it's really important for me to see that
 19 there is another biomarker study that shows
 20 the results consistent with ours.
 21 And at the time, I didn't
 22 realize that they were studying maternal
 23 plasma and cord blood, which is fetal tissue,
 24 also. And they reported an association also
 25 supporting the association, the link, between

<p style="text-align: right;">Page 362</p> <p>1 acetaminophen and ADHD.</p> <p>2 Q. That answer you just gave, that</p> <p>3 was about Ji?</p> <p>4 A. Ji.</p> <p>5 Q. Okay.</p> <p>6 A. Ji, et al.</p> <p>7 Q. Did I ask you about Ji?</p> <p>8 A. Yes.</p> <p>9 Q. I did?</p> <p>10 Okay.</p> <p>11 A. Oh, yeah. No, sir, you didn't.</p> <p>12 I'm getting confused.</p> <p>13 Q. Okay. One of the things that</p> <p>14 was done here is the level of acetaminophen</p> <p>15 in the meconium was broken into three -- two</p> <p>16 groups in the exposed population, right?</p> <p>17 A. Correct.</p> <p>18 Q. And the midpoint to divide the</p> <p>19 two exposed groups was just the 50th</p> <p>20 percentile of the concentration of the</p> <p>21 acetaminophen in the meconium, right?</p> <p>22 A. It was the median.</p> <p>23 Q. Okay. It wasn't any particular</p> <p>24 amount that was chosen ahead of time. It was</p> <p>25 just the middle, the average?</p>	<p style="text-align: right;">Page 364</p> <p>1 splitting three groups. No acetaminophen, 8;</p> <p>2 low acetaminophen, 9; high acetaminophen, 16.</p> <p>3 You see a nice trend of</p> <p>4 proportions going up from 5.5 percent of</p> <p>5 children having acetaminophen in the --</p> <p>6 having no acetaminophen and ADHD; 8.5 percent</p> <p>7 low acetaminophen; 17.2 percent with high</p> <p>8 acetaminophen and ADHD. This is what you see</p> <p>9 when you have a dose-response relationship.</p> <p>10 I also want to point out that</p> <p>11 we have an analysis where we looked at all</p> <p>12 the data together, with no categories, where</p> <p>13 we used the actual numbers, not just the</p> <p>14 categories. That is on the right-hand side</p> <p>15 of Table 2 where we used the data altogether,</p> <p>16 and that showed significant results.</p> <p>17 For each dabbling, I believe,</p> <p>18 in acetaminophen level, we get a 10 percent</p> <p>19 statistically significant increased risk.</p> <p>20 Q. And this is all based on 25</p> <p>21 meconium samples --</p> <p>22 A. No.</p> <p>23 Q. -- correct?</p> <p>24 A. It's based on -- it's based on</p> <p>25 345 meconium samples. All of them. All of</p>
<p style="text-align: right;">Page 363</p> <p>1 A. It was chosen ahead of time to</p> <p>2 be the median.</p> <p>3 Q. Okay.</p> <p>4 A. It's something that we do</p> <p>5 commonly in epidemiology. The median</p> <p>6 provides the sweet point, the sweet spot,</p> <p>7 where to cut a group because it provides the</p> <p>8 best power. So it is something that many</p> <p>9 epidemiologists do.</p> <p>10 Q. In Laue, you were looking at</p> <p>11 55 nanograms per gram, right? That was a</p> <p>12 specific point that was not the median,</p> <p>13 right?</p> <p>14 A. Which is the same as the</p> <p>15 difference between no acetaminophen and low</p> <p>16 acetaminophen, I would say. Unless I'm</p> <p>17 wrong. But that was the detection limit of</p> <p>18 no versus yes. Here we're splitting the yes</p> <p>19 in two groups because we have more people.</p> <p>20 Q. And if you look at the actual</p> <p>21 subjects that had a diagnosis -- well, that</p> <p>22 had ADHD symptomology and acetaminophen in</p> <p>23 the meconium, it's 25, right?</p> <p>24 A. We reviewed the group.</p> <p>25 Altogether there are 33, correct? They're</p>	<p style="text-align: right;">Page 365</p> <p>1 them contribute to the analysis. All of them</p> <p>2 give information to the analysis.</p> <p>3 Q. Okay. Dr. Baccarelli, is it</p> <p>4 true or not true that in this study, in Baker</p> <p>5 2020, Exhibit 100, there are 25 subjects that</p> <p>6 have ADHD symptoms and acetaminophen in the</p> <p>7 meconium?</p> <p>8 A. I don't think it's my role here</p> <p>9 to go into epidemiology 101, but the power of</p> <p>10 a study is contributed both by the cases and</p> <p>11 the controls, the exposed and the unexposed.</p> <p>12 So the entire power is given by 345 subjects.</p> <p>13 You understand that the power</p> <p>14 is due not just to the cases but the</p> <p>15 controls. You are trying -- you are</p> <p>16 getting -- you are getting down to a subset</p> <p>17 of the fourth groups of people -- or the</p> <p>18 sixth group of people, actually, but the</p> <p>19 power is based on 345 subjects. It's not</p> <p>20 based on only the group you are mentioning.</p> <p>21 Q. Okay. I didn't ask you about</p> <p>22 power, Dr. Baccarelli. I asked you about</p> <p>23 data.</p> <p>24 Can you confirm the data, that</p> <p>25 my number of 25 is correct?</p>

<p>Page 366</p> <p>1 A. You are asking about numbers, 2 and we are talking about sample size. So 3 sample size and power are the same thing in 4 epidemiology. 5 Q. Can you answer or not? 6 A. I can answer. 7 Q. In that article, Baker 2020, 8 were there 25 subjects that both had 9 acetaminophen in their meconium and symptoms 10 of ADHD as a child? 11 A. So that is true. As part of a 12 larger sample size of 345 people, including 13 34 that had ADHD, and with es -- very 14 inaccurate measurements in meconium. 15 And again, what makes this 16 study particularly stand out is the meconium, 17 but other studies have other strengths that 18 are -- that are not in the study. 19 Q. How many of those 25, 20 Dr. Baccarelli, had delivery or labor 21 administration of acetaminophen according to 22 the hospital record? 23 MR. SNIDOW: Objection to form. 24 THE WITNESS: So, again, we are 25 talking about 345 children, so that</p>	<p>Page 368</p> <p>1 QUESTIONS BY MR. MURDICA: 2 Q. Please mark this as 3 Exhibit 102, please. 4 Dr. Baccarelli, do you 5 recognize what's been marked as Exhibit 102? 6 A. Yes, the supplementary 7 materials. 8 Q. Okay. I'd like you to turn to 9 the fourth page when you're ready for me. 10 It's e Table 2. 11 A. e Table 2. Okay. 12 Q. Okay. So my first question, 13 Doctor, is a simple one. If you look at the 14 column no acetaminophen -- do you see that? 15 A. Uh-huh. 16 Q. Do you see N equals 146? 17 A. Correct. 18 Q. Okay. That's 146 meconium 19 samples, right? 20 A. 146 people with meconium 21 sampled, children and their mothers. 22 Q. Okay. And when it says 23 "female" and "male," you see 166 female and 24 179 male, right? 25 A. Correct.</p>
<p>Page 367</p> <p>1 is -- and some of them had 2 administration of acetaminophen 3 during pregnancy -- sorry, during 4 pregnancy, some at delivery, according 5 to the hospital charts. 6 And, again, we are schooled to 7 the subjects in a sensitivity 8 analysis. The results were exactly 9 the same, so it doesn't make a 10 difference really. Just 11 administration, this later 12 administration you're referring to, is 13 not influencing the results. 14 QUESTIONS BY MR. MURDICA: 15 Q. Can you answer my question, 16 Dr. Baccarelli? How many of the 25 had 17 acetaminophen administered at delivery? 18 A. So as I sit here today, I 19 cannot remember. 20 Q. Okay. 21 A. If it's written in the paper, 22 I'm happy to discuss. 23 (Baccarelli Exhibit 102 marked 24 for identification.) 25</p>	<p>Page 369</p> <p>1 Q. Okay. That doesn't add to 146, 2 correct? 3 A. That seems to be a mistake. 4 Thank you for pointing it out. 5 Q. Okay. How about look over to 6 the next column. 7 199. You see the same numbers, 8 right? 166 and 179? 9 A. It seems like someone copied 10 and pasted, and we didn't catch it. Thank 11 you. 12 Q. Go down to maternal education. 13 154 and 191 in both columns, right? 14 A. Absolutely. They're all wrong. 15 Q. The columns 2 and 3 appear to 16 be entirely in error, correct? 17 A. Absolutely. Just -- I want to 18 make sure you understand that the reason why 19 we are showing these is because we considered 20 these variables in a different part of 21 analysis. We created ways on these 22 variables, and we used the actual variables, 23 not the ones that are shown in this table, to 24 adjust for confounding. 25 So we adjusted these in the</p>

<p style="text-align: right;">Page 370</p> <p>1 confounding. You can be sure that the</p> <p>2 variables are right. Just the reporting is</p> <p>3 not right.</p> <p>4 And I'm sorry this happened.</p> <p>5 I'm honestly mortified by this, but sometimes</p> <p>6 these type of copy-and-paste errors happen.</p> <p>7 Q. The fourth column, Doctor, has</p> <p>8 a weighting --</p> <p>9 A. Yeah.</p> <p>10 Q. -- and a standardization in the</p> <p>11 fourth and fifth column, right?</p> <p>12 A. Correct.</p> <p>13 Q. And those -- where did those</p> <p>14 numbers come from?</p> <p>15 A. From the database.</p> <p>16 Q. Okay.</p> <p>17 A. Maybe we can read how it was</p> <p>18 done.</p> <p>19 Q. You can read it if you want,</p> <p>20 Doctor. I'm just asking if you know.</p> <p>21 You gave me an answer, so I'm</p> <p>22 ready to ask another question.</p> <p>23 MR. SNIDOW: Objection to the</p> <p>24 form.</p> <p>25 MR. MURDICA: Well, he --</p>	<p style="text-align: right;">Page 372</p> <p>1 And I think these variables are</p> <p>2 the same in this Table e2 in the</p> <p>3 supplement. Unfortunately, the</p> <p>4 breakdown is not right, but the</p> <p>5 weights were calculated directly from</p> <p>6 the data set. It's not that we used</p> <p>7 the table to calculate the weights.</p> <p>8 The weights are calculated by the</p> <p>9 package by feeding the data as they</p> <p>10 are in the data set.</p> <p>11 QUESTIONS BY MR. MURDICA:</p> <p>12 Q. And you're getting that from</p> <p>13 reading the article, right?</p> <p>14 A. I'm getting that by knowing how</p> <p>15 things are done.</p> <p>16 Q. Okay.</p> <p>17 A. And we don't use tables to do</p> <p>18 these calculations. We use software. I</p> <p>19 think you understand that the software is --</p> <p>20 the student who does the table can get it</p> <p>21 wrong, but the software doesn't.</p> <p>22 Q. Okay. Now, this study was part</p> <p>23 of Mr. Baker's dissertation, correct?</p> <p>24 A. Uh-huh.</p> <p>25 Q. And you advised him on what</p>
<p style="text-align: right;">Page 371</p> <p>1 MR. SNIDOW: Objection to the</p> <p>2 form.</p> <p>3 QUESTIONS BY MR. MURDICA:</p> <p>4 Q. I have a question on the next</p> <p>5 table when you are ready for it.</p> <p>6 A. Yes, please.</p> <p>7 MR. SNIDOW: Objection to the</p> <p>8 form.</p> <p>9 THE WITNESS: So you asked me</p> <p>10 how they were used.</p> <p>11 They were -- my understanding</p> <p>12 as I sit here today is that this is</p> <p>13 related to page 175 of the PDF, which</p> <p>14 is somewhere in the statistical</p> <p>15 analysis.</p> <p>16 Page 7 out of 23 of the</p> <p>17 Exhibit 101. Data were analyzed from</p> <p>18 September, et cetera, et cetera. To</p> <p>19 control for potential confounders, we</p> <p>20 used the inverse probability weighting</p> <p>21 for propensity score in this -- our</p> <p>22 package. And in fact, we weighed all</p> <p>23 the potential scores and the way it</p> <p>24 was done, and we used these variables</p> <p>25 to adjust for potential confounders.</p>	<p style="text-align: right;">Page 373</p> <p>1 studies should be done, right?</p> <p>2 A. He actually came up with his</p> <p>3 own ideas. All of this was -- he started</p> <p>4 with this. I directed him. We directed him</p> <p>5 as a team, and he came up with this -- he's a</p> <p>6 pretty remarkable young individual, very</p> <p>7 smart and very bright. And he did a lot</p> <p>8 of -- he had a lot of ideas that I approved</p> <p>9 and I seconded, and I think he did a pretty</p> <p>10 good job.</p> <p>11 Q. And he -- his original idea was</p> <p>12 to have an animal study as well, right?</p> <p>13 A. He did do an animal study.</p> <p>14 Q. Well, he had two aims, two</p> <p>15 thesis aims, right?</p> <p>16 A. Correct.</p> <p>17 Q. One was the meconium?</p> <p>18 A. Correct.</p> <p>19 Q. And another was a mouse study,</p> <p>20 right?</p> <p>21 A. Which he published, I think, in</p> <p>22 Baker 2023. I think it's that one.</p> <p>23 He didn't do the animal study</p> <p>24 with me. He did it with Dr. Pearson.</p> <p>25 Q. Yeah.</p>

Page 374

1 Do you remember that originally
 2 they were supposed to be together and you
 3 recommended he talk to Dr. Pearson, or no?
 4 A. Can you please remind me that?
 5 I'm not sure -- I'm not sure I remember the
 6 situation.
 7 Q. That's okay.
 8 A. I don't do animal studies, so
 9 certainly he didn't do animal studies with
 10 me.
 11 Q. All right. Do you recall
 12 getting a draft of the meconium portion of
 13 the study?
 14 A. No. I'm sure I did, but I
 15 don't remember every draft.
 16 (Baccarelli Exhibit 103 marked
 17 for identification.)
 18 QUESTIONS BY MR. MURDICA:
 19 Q. Have you seen this before,
 20 Doctor, what's been marked as Exhibit 103?
 21 A. Yep.
 22 Q. Okay. And do you see -- this
 23 is by Mr. Baker, right?
 24 A. Yes, it is.
 25 Q. And he identifies in the first

Page 375

1 paragraph that one issue with the DNBC cohort
 2 is that self-reported drug use may be
 3 inaccurate, and metabolism of acetaminophen
 4 may vary between individuals, right?
 5 A. Again, this is -- we are
 6 highlighting the strengths of our study,
 7 which is having meconium. And I think I said
 8 before on record that if that is the case,
 9 it's probably biasing the results towards the
 10 null in the Danish cohort, meaning the Danish
 11 cohort is likely to underestimate the risk
 12 posed by acetaminophen.
 13 Q. And that's what you think he
 14 meant here when he wrote what I just said?
 15 A. What is the sentence exactly?
 16 Q. "One limitation of the study
 17 was that it relied on self-reported
 18 acetaminophen via telephone interviews.
 19 Self-reported drug use may be inaccurate.
 20 Metabolism of acetaminophen may vary between
 21 individuals."
 22 MR. SNIDOW: Where are you,
 23 Jim?
 24 MR. MURDICA: First paragraph.
 25 MR. SNIDOW: Oh, okay. Thank

Page 376

1 you.
 2 THE WITNESS: Correct. And we
 3 follow by saying, "Thus, a biological
 4 measure of acetaminophen would likely
 5 provide a more reliable estimate of
 6 exposure."
 7 And I think the body of the
 8 evidence shows that. I don't think my
 9 report. We showed a relative risk
 10 with having acetaminophen that was in
 11 this paper that eventually came out
 12 two or three years after. We have an
 13 odds ratio with high acetaminophen of
 14 3.6.
 15 So this 360 percent higher than
 16 people are not exposed in this study,
 17 while in Liew -- I can't remember
 18 which Liew it is. Liew has a lot of
 19 papers. But it might have been like
 20 30 percent, 40 percent or 50 percent.
 21 So clearly I stand by his
 22 words, because the data show that
 23 having a better -- a better method of
 24 exposure makes easier to detect the
 25 association.

Page 377

1 And if there is one thing
 2 remarkable here is that even with
 3 wisterniles {phonetic}, there are
 4 10 -- 20-plus studies that showed an
 5 association, even though you would
 6 expect that the self-report would bias
 7 everything toward the null or cleared
 8 false negatives. Instead, we have a
 9 lot of true positives.
 10 QUESTIONS BY MR. MURDICA:
 11 Q. Dr. Baccarelli, do you see that
 12 Dr. Baker said the results of this pilot are
 13 likely unreliable with such a small sample of
 14 ADHD-positive children?
 15 MR. SNIDOW: Where is that?
 16 THE WITNESS: Where is that?
 17 QUESTIONS BY MR. MURDICA:
 18 Q. It's the second paragraph,
 19 third sentence.
 20 A. I really don't know what it is,
 21 but if you can see the pilot analysis, there
 22 is only one case of ADHD without
 23 acetaminophen detected in meconium.
 24 So I can't remember which
 25 subset it is, but it's in another subset we

<p style="text-align: right;">Page 378</p> <p>1 published. It was a preliminary analysis, 2 and I'm happy we published an analysis with 3 many more samples. 4 Q. Well, Doctor, if you look at 5 the chart right below the pilot analysis, you 6 see that there's 222 samples with 7 acetaminophen detected in meconium and 172 8 without, right? 9 A. Correct. 10 Q. Right. 11 And there's 11 ADHD diagnoses 12 with acetaminophen in meconium and one 13 without. 14 A. Okay. 15 Q. Do you see that? 16 A. I see that. 17 Q. This is the same cohort that 18 was ultimately published. This is the GESTE 19 cohort, right? 20 MR. SNIDOW: Objection to form. 21 THE WITNESS: It seems to be 22 the same. I don't know why these 23 results were different. I -- 24 definitely we do a lot of iterations 25 of analyses, and you can understand</p>	<p style="text-align: right;">Page 380</p> <p>1 published with 345 children, and 33 who had 2 ADHD. 3 And that is, in my opinion, 4 enough for this paper. This paper is a -- is 5 a good piece of literature, that put in the 6 context of all the other papers in the 7 universe of papers is very consistent with 8 the other 45 papers in the literature. 9 If this were an outlier, I 10 would be worried. This is not an outlier. 11 Q. Doctor -- 12 A. This is one of the papers that 13 together with the other 30 confirms my 14 assessment of causality. 15 Q. Dr. Baccarelli, where did the 16 extra 20 ADHD diagnoses come from between 17 this draft, Exhibit 103, this pilot analysis, 18 and the final publication? 19 A. It comes from -- you need to 20 ask Baker. I don't know how -- how -- what 21 is the difference, really. 22 Q. Okay. And you -- 23 A. As it stand today -- I can look 24 for it up for you, but as it stand today, I 25 don't know what is the difference.</p>
<p style="text-align: right;">Page 379</p> <p>1 that the odds ratio -- the risk ratio 2 here is 8.5. 3 So if we published this, the 4 results would be even stronger. And 5 we didn't do the regions. We 6 completed the data set. We waited for 7 all the samples. We -- and the 8 analysis show what we find here. 9 So I can stand by Baker 2020. 10 I cannot stand by the pilot analysis. 11 The pilot analysis is just for 12 internal use to guide our thinking. 13 QUESTIONS BY MR. MURDICA: 14 Q. In the pilot analysis, when 15 there were 12 ADHD diagnoses with 16 acetaminophen -- or 11 with acetaminophen 17 detected in meconium, was enough for 18 Dr. Baker to say that it's likely unreliable 19 with such a small sample of ADHD-positive 20 children, right? 21 A. That is what Dr. Baker said. I 22 mean, you will have to ask him, though. 23 Q. And ultimately, you published 24 with 25. The 11 was unreliable, right? 25 A. I didn't publish with 25. I</p>	<p style="text-align: right;">Page 381</p> <p>1 Q. And you disagree with him that 2 with a total of 222 and 172, with 12 ADHD 3 diagnoses, that this is likely unreliable 4 with such a small sample of ADHD-positive 5 children, right? 6 MR. SNIDOW: Object to the 7 form. 8 THE WITNESS: I actually -- I'm 9 not sure I agree. I mean, he doesn't 10 show me a p-value. He doesn't show me 11 a confidence interval. It gives me a 12 risk ratio of 8.5, which is pretty 13 high. 14 And, I mean, I'm happy we 15 did -- we published with more samples, 16 but, you know, a risk ratio of 8.5 in 17 the literature probably is significant 18 from this data. Would have been an 19 interesting result. 20 And again, he said that, and 21 that's okay. I mean, you can 22 understand that this is an internal 23 document to prepare a data analysis 24 plan. And I reviewed it being worried 25 that what he was proposing was a</p>

<p style="text-align: right;">Page 382</p> <p>1 different analysis. Had nothing to do 2 with Baker 2020. Was interesting and 3 reliable. 4 I didn't thoroughly review the 5 rest of the document as carefully as I 6 do when something goes out in the 7 press. 8 At the same time, you would 9 agree that these results here give 10 about the same conclusion as the 11 result here in the -- in the 12 meta-analysis plan, give about the 13 same conclusion as the one here in the 14 study. 15 The conclusion is that there is 16 a strong possible association between 17 meconium -- between acetaminophen 18 measured in meconium and a risk of 19 ADHD in children. 20 And if any, this is less -- is 21 weaker in terms of strength of 22 association in terms of effect size 23 than the one you see here in the 24 meta-analysis plan. 25</p>	<p style="text-align: right;">Page 384</p> <p>1 scores he had. 2 There are many ways you can -- 3 you can create exclusionary and 4 inclusion criteria. This is not 5 documented here, so it's impossible 6 for me to tell you what -- to 7 reconstruct what happened. 8 (Baccarelli Exhibit 104 marked 9 for identification.) 10 QUESTIONS BY MR. MURDICA: 11 Q. Okay. Doctor, we have marked 12 as number -- Exhibit 104 the Baker 2020 draft 13 which you reviewed. 14 Do you recognize that? 15 A. Yes. 16 Would you be able to tell me 17 when this was circulated? 18 Q. I would not, but my question is 19 simple, and I only have one for now, so you 20 may be able to get by without that. 21 MR. SNIDOW: Objection to the 22 form. 23 QUESTIONS BY MR. MURDICA: 24 Q. If you turn to page 1191. 25 A. 1191.</p>
<p style="text-align: right;">Page 383</p> <p>1 QUESTIONS BY MR. MURDICA: 2 Q. Exhibit 103, Dr. Baker said, 3 would be unreliable because of sample size -- 4 MR. SNIDOW: Objection to the 5 form. 6 QUESTIONS BY MR. MURDICA: 7 Q. -- correct? 8 A. You need to ask him about that. 9 Q. Okay. And if I wanted to know 10 where the extra 20 cases came from in that 11 cohort in order to get it published, I'd have 12 to ask him, right? 13 MR. SNIDOW: Objection to the 14 form. 15 THE WITNESS: So they came -- 16 they came in from the data cleaning at 17 follow-up. We were completing the 18 database. The database were completed 19 over time. 20 Why he's -- he had only these 21 cases, I don't know. I don't know 22 what exclusions he used. They're not 23 written in this manuscript. 24 Perhaps he used only the ones 25 that had the -- not neuropsychological</p>	<p style="text-align: right;">Page 385</p> <p>1 Q. If you look at comment AB 19, 2 what the comment is, and correct me if I'm 3 wrong, is that though the manuscript says 4 there's 76 MRIs, you're saying, well, we 5 actually have 101. I know you want to 6 publish it, but there's more MRIs now. 7 MR. SNIDOW: Sorry, I'm 8 actually lost now. 9 On 10 -- 191? 10 MR. MURDICA: Yeah, 1191, 11 comment AB 19. 12 MR. SNIDOW: Do you see it? 13 Yeah. 14 THE WITNESS: Yeah, this is 15 about the MRI. Only specific about 16 the MRI. 17 QUESTIONS BY MR. MURDICA: 18 Q. That's all I'm asking you 19 about. 20 MR. SNIDOW: What are you 21 asking? 22 Objection to the form. 23 QUESTIONS BY MR. MURDICA: 24 Q. Okay. Do you remember I asked 25 you before about how many MRIs you had?</p>

<p style="text-align: right;">Page 386</p> <p>1 A. Correct.</p> <p>2 Q. Right.</p> <p>3 So at the time that this --</p> <p>4 prior to publication, while it was being</p> <p>5 edited, AB pointed out in a comment that</p> <p>6 there were actually 101 now, right?</p> <p>7 A. Okay. I discussed this with</p> <p>8 Baker. I discussed with Posner. We agreed</p> <p>9 that the number that we had was enough.</p> <p>10 As you understand, this was --</p> <p>11 the MRI is not the main focus of this</p> <p>12 manuscript. The main focus of this</p> <p>13 manuscript is the association between</p> <p>14 meconium, acetaminophen and ADHD. And this</p> <p>15 uses the full study.</p> <p>16 The MRI is supporting evidence</p> <p>17 that also helps understand the circulus. And</p> <p>18 it was agreed between Dr. Posner and</p> <p>19 Dr. Baker, who -- that -- that we -- that the</p> <p>20 number we had was enough for the publication.</p> <p>21 So it expanded the -- waiting for the data to</p> <p>22 come in and being clean was not worth it, but</p> <p>23 given that we were -- that we were ready to</p> <p>24 publish this manuscript.</p> <p>25 Q. So you have a third more MRIs</p>	<p style="text-align: right;">Page 388</p> <p>1 one-third more, so I think it's okay.</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. Okay. You rely heavily on the</p> <p>4 MRI analysis in your scoring of this paper,</p> <p>5 correct?</p> <p>6 A. No, I relied a lot on the</p> <p>7 meconium --</p> <p>8 Q. Okay.</p> <p>9 A. -- and I said the MRI is nice</p> <p>10 to have. Not a must have. I wouldn't have</p> <p>11 changed the score if the MRI was not there.</p> <p>12 Q. Okay. One more question on</p> <p>13 1198.</p> <p>14 A. 1190 -- same --</p> <p>15 Q. Same document.</p> <p>16 A. Same draft.</p> <p>17 Q. There's a sentence, "Taken</p> <p>18 together with the relatively small MRI sample</p> <p>19 size, studies in larger and more diverse</p> <p>20 cohorts are needed to replicate these novel</p> <p>21 findings."</p> <p>22 A. What is it?</p> <p>23 MR. SNIDOW: Yeah, where?</p> <p>24 MR. MURDICA: 1198. It's the</p> <p>25 second sentence.</p>
<p style="text-align: right;">Page 387</p> <p>1 that weren't analyzed at the time you</p> <p>2 published, correct?</p> <p>3 A. And I don't think we ever</p> <p>4 analyzed it.</p> <p>5 Q. Okay. You have a third more</p> <p>6 that you did not analyze at the time of</p> <p>7 publication and you have not analyzed to</p> <p>8 date.</p> <p>9 Is that your testimony?</p> <p>10 A. We haven't analyzed them to</p> <p>11 date --</p> <p>12 Q. Okay.</p> <p>13 A. -- and I would be surprised if</p> <p>14 it changes anything in the publication.</p> <p>15 Usually when you increase the</p> <p>16 sample size, you see more. We saw already</p> <p>17 enough. So an increase in sample size would</p> <p>18 have shown more effect than what we showed</p> <p>19 there.</p> <p>20 Q. But you don't know what it</p> <p>21 would have shown, because you didn't analyze</p> <p>22 it, right, Doctor?</p> <p>23 MR. SNIDOW: Objection to the</p> <p>24 form.</p> <p>25 THE WITNESS: Again, it's only</p>	<p style="text-align: right;">Page 389</p> <p>1 MR. SNIDOW: Oh, I'm sorry. I</p> <p>2 was looking --</p> <p>3 THE WITNESS: Yeah.</p> <p>4 MR. SNIDOW: -- at comments.</p> <p>5 QUESTIONS BY MR. MURDICA:</p> <p>6 Q. And then there's a comment on</p> <p>7 it, right?</p> <p>8 A. Yeah.</p> <p>9 Q. Okay. So my question for you</p> <p>10 is, do you agree that the MRI sample size is</p> <p>11 relatively small?</p> <p>12 A. Yeah, but it's enough to see an</p> <p>13 effect. So it's pretty interesting that we</p> <p>14 see an effect.</p> <p>15 Q. Okay. Move on to the next one.</p> <p>16 Can you turn back to Exhibit</p> <p>17 99?</p> <p>18 MR. SNIDOW: Whenever you want.</p> <p>19 You need to have a break?</p> <p>20 THE WITNESS: Okay. Bathroom.</p> <p>21 Thank you. Sorry. I was more --</p> <p>22 MR. SNIDOW: Are we off the</p> <p>23 record?</p> <p>24 MR. MURDICA: Yeah.</p> <p>25 VIDEOGRAPHER: The time right</p>

Page 390

1 now is 3:56 p.m. We are off the
 2 record.
 3 (Off the record at 3:56 p.m.)
 4 VIDEOGRAPHER: The time right
 5 now is 4:15 p.m. We are back on the
 6 record.
 7 QUESTIONS BY MR. MURDICA:
 8 Q. Dr. Baccarelli, could you --
 9 welcome back.
 10 Are you ready to proceed?
 11 A. Yes, please.
 12 Q. Can you please put your amended
 13 report, Exhibit 99, back in front of you?
 14 A. Yeah.
 15 Q. Would you turn to page 14,
 16 please.
 17 A. Uh-huh.
 18 Q. Okay. So one of the things you
 19 say on page 14, the -- under extraction of
 20 important study information is your last
 21 sentence, "I did not perform a new
 22 meta-analysis myself because excellent
 23 meta-analyses have recently been published."
 24 Do you see that?
 25 A. Yeah, there are meta-analysis

Page 391

1 that have been published. I didn't do one
 2 myself.
 3 Q. Okay. And that was -- that was
 4 your determination, and you put that there,
 5 right?
 6 A. Correct.
 7 Q. Okay. All right. If we turn
 8 to page -- I may be wrong here -- 63.
 9 A. 5-3?
 10 Q. 6-3.
 11 A. 6-3?
 12 Q. Do you see at the bottom of the
 13 page, paragraph, "Accurate and complete
 14 ascertainment of cases"?
 15 A. Yep.
 16 Q. And case-control studies, et
 17 cetera?
 18 A. Uh-huh.
 19 Q. And you can -- it goes on to
 20 the next page and ends with, "For both types
 21 of studies, cases should be confirmed with
 22 reasonable certainty."
 23 Right?
 24 A. I'm sorry, let me take a look.
 25 Yeah.

Page 392

1 Q. Now, does reasonable certainty
 2 mean medical record confirmation?
 3 A. No, it doesn't mean medical
 4 record confirmation. It can be done in
 5 multiple ways. In this case of ADHD and ASD
 6 has been done in multiple ways.
 7 And different streams of
 8 evidence give different information. So I
 9 found actually the variety of tools that been
 10 used to be very interesting because they
 11 provide complementary information.
 12 Q. Okay. Dr. Baccarelli, do you
 13 work with any other epidemiologists outside
 14 of Columbia?
 15 A. Yes. I worked with about 100
 16 or 200 institutions all over my career. Most
 17 of them are epidemiologists.
 18 Q. Did you work with any other
 19 epidemiologists on this report?
 20 A. No.
 21 Q. You didn't have any
 22 epidemiologists write any parts of this
 23 report?
 24 A. No.
 25 Q. Okay.

Page 393

1 A. Only me.
 2 Q. Do you know someone named Anne
 3 McTiernan?
 4 A. Sorry, what is the name?
 5 Q. Anne McTiernan?
 6 A. No.
 7 Q. Do you have any -- you don't --
 8 you've never met her?
 9 A. I don't recognize the name.
 10 Q. Okay. Could you explain why
 11 this expert report is identical in over 60
 12 places to an expert report that she's filed
 13 in another case?
 14 A. No.
 15 Q. Okay. It just -- it's pure
 16 coincidence if that's the case?
 17 A. I don't know. I mean, I don't
 18 know that person.
 19 Q. Okay. You chose the words in
 20 here, right?
 21 A. Yes.
 22 (Baccarelli Exhibits 105 and
 23 106 marked for identification.)
 24 QUESTIONS BY MR. MURDICA:
 25 Q. Okay. You know what, I'm going

<p style="text-align: right;">Page 394</p> <p>1 to mark the McTiernan report as Exhibit 105. 2 I'm also going to mark the Ji 3 article as Exhibit 106. 4 Okay. Doctor, you now have in 5 front of you an article by Ji that you 6 referenced earlier, which has been marked as 7 Exhibit 106. 8 Do you see that? 9 A. Yes. 10 Q. Okay. You agreed with me 11 earlier that cord blood provides information 12 on one snapshot of time for acetaminophen 13 use, correct? 14 A. So cord blood only captures the 15 level of acetaminophen a few hours before 16 pregnancy. But at the same time you -- I 17 think Ji, et al., make the argument that it 18 can also be reflective of prolonged use in 19 the same women. 20 Q. Ji, for example, said the cord 21 plasma measurement may at most reflect 22 maternal use of acetaminophen during the 23 peripartum period, correct? 24 A. Correct. That is pretty 25 impressive, because that means in the</p>	<p style="text-align: right;">Page 396</p> <p>1 are in the reference that shouldn't be there. 2 So if they were not there, if we're able to 3 separate, the observation would be much 4 higher. 5 Q. Doctor, that's -- are there 6 also not a bunch of -- a bunch of people, to 7 use your terms, that are having acetaminophen 8 for the first time in their pregnancy due to 9 labor and delivery? 10 A. It's entirely possible. 11 Q. Wouldn't that bias it the other 12 way, Doctor? 13 A. How would it bias the other way 14 around? Sorry? 15 Q. If many of these subjects 16 are -- only have acetaminophen in the cord 17 blood because of administration to their 18 mother during labor and delivery, otherwise 19 they were unexposed, that could bias it 20 towards a positive association, correct? 21 A. So strictly speaking, labor or 22 delivery is still pregnancy, correct? The 23 baby hasn't come out yet. 24 Q. You testified earlier, Doctor, 25 that you don't have the information here</p>
<p style="text-align: right;">Page 395</p> <p>1 nonexposed there are a lot of women that 2 indeed use acetaminophen, but they're not 3 include -- including the exposed group. So 4 this article is likely to be biased toward 5 the null, while instead it shows an 6 association. 7 So if this article were null, I 8 would be very worried about your statement 9 because I would be worried about this being a 10 false negative. 11 But because it is positive, it 12 cannot be a false positive. It's even more 13 likely to be a true positive. 14 Q. Because women are taking 15 acetaminophen for -- during labor and 16 delivery? 17 A. Because misclassification -- 18 because there is mis -- you are arguing there 19 is misclassification, that exposure doesn't 20 reflect the entire pregnancy. So we are 21 mixing up. In the group of people who are 22 nonexposed, there is a mix of people who 23 actually are exposed. So we are diluting the 24 association. 25 There is a bunch of people that</p>	<p style="text-align: right;">Page 397</p> <p>1 today to say that exposure to acetaminophen 2 during labor and delivery is causal for the 3 outcomes of autism and ADHD. 4 A. I did -- 5 MR. SNIDOW: Hold on. Hold on. 6 Objection to the form. 7 THE WITNESS: I definitely 8 didn't say that. I said that labor 9 and delivery is part of pregnancy. 10 And my statement is that the whole of 11 pregnancy is a vulnerable period. And 12 I even went on to say that the weeks, 13 days and even years after pregnancy 14 might be important. 15 Just I clarified that -- and I 16 wrote in my report there is an entire 17 chapter about this -- that there have 18 been plenty of studies adjusting 19 for -- adjusting the association of 20 acetaminophen during pregnancy with 21 ADHD, ASD and other neurodevelopmental 22 disorders for whether people have 23 taken or not, children have taken or 24 not, acetaminophen after delivery and 25 during childhood, and that is not a</p>

Page 398

1 factor.

2 So I think you are

3 misrepresenting what I said.

4 QUESTIONS BY MR. MURDICA:

5 Q. Okay. The court -- let me try

6 again.

7 According to Dr. Baccarelli,

8 one exposure to acetaminophen, one time at

9 the time of delivery, is enough to induce

10 autism or ADHD in a child, correct?

11 MR. SNIDOW: Objection to the

12 form.

13 THE WITNESS: So I believe I

14 wrote in my report that I have

15 reasonable certainty to state that

16 there is an association between

17 acetaminophen -- acetaminophen --

18 acetaminophen and neurodevelopmental

19 disorders, particularly ADHD and ASD,

20 particularly when women have taken the

21 drug for 28 days and more, cumulative,

22 at any time during pregnancy.

23 So I stand with what I wrote.

24 QUESTIONS BY MR. MURDICA:

25 Q. Okay. So back to my original

Page 399

1 question.

2 If a woman takes acetaminophen

3 for the first time of her pregnancy at the

4 time of delivery, that was not an exposure

5 for 28 days or more during pregnancy,

6 correct?

7 MR. SNIDOW: Objection to the

8 form.

9 THE WITNESS: So, again, all --

10 my standing, that is based on the

11 epidemiology studies that have used

12 the medication reported by the women.

13 Now we are looking at one -- at one

14 single point where women are exposed

15 to acetaminophen.

16 It's really impressive that

17 this happens, because if you didn't

18 find anything, you could say, okay,

19 but they measured once.

20 But since they found it, it's

21 pretty impressive they found it. It

22 can be that, as you say, one time is

23 okay, is enough to cause the effect,

24 but it might be that the women who

25 have taken acetaminophen around the

Page 400

1 time of delivery might have taken it

2 for six months, two years, might have

3 low back pain. They might have

4 persistent headaches.

5 There are many reasons why

6 women take acetaminophen for long

7 time, and it might be those women who

8 take acetaminophen for long time who

9 are included in the exposed group,

10 including with others who have taken

11 just in the past few hours.

12 QUESTIONS BY MR. MURDICA:

13 Q. And that data was not collected

14 by Ji, correct?

15 A. I -- again, you have to ask

16 them for that. I don't see it in the paper.

17 Q. Yeah.

18 In fact, this -- the cord blood

19 wasn't collected to study acetaminophen,

20 right?

21 A. That, I don't know.

22 Q. Okay.

23 A. You will have to tell me, or

24 you have to ask Ji.

25 Q. Okay. Have you ever seen any

Page 401

1 information about the acetaminophen use of

2 the mothers here, other than the

3 acetaminophen level in the cord blood at the

4 time of delivery?

5 A. Again, a biomarker study don't

6 need that information. When you do a

7 biomarker study, you are interested in

8 associating the biomarker with the outcome.

9 In this case, ADHD and ASD in this paper.

10 Q. Dr. Baccarelli, do you know the

11 standard medication or medications given to a

12 woman to prepare for a cesarean section?

13 A. I have some idea from my

14 medical education.

15 Q. And what do you think that is?

16 A. Probably -- I don't know.

17 Q. Do you have any guesses?

18 MR. SNIDOW: Objection to the

19 form.

20 You really want him to guess?

21 MR. MURDICA: Well, he's the

22 expert.

23 MR. SNIDOW: Not on -- not on

24 how to do a C-section.

25 THE WITNESS: I've never done a

Page 402

1 C-section. I can -- I can tell you
2 that none --
3 QUESTIONS BY MR. MURDICA:
4 Q. Okay.
5 A. I'm not planning on doing any
6 in the near future.
7 I -- in addition to that, I
8 think we reviewed that the data by Baker
9 stand alone without the perinatal
10 administration.
11 There are also -- also, many
12 studies have been adjusted for the type of
13 delivery, so I think we are covered on that.
14 And, again, there are many
15 questions you can ask about issuing a study,
16 but when you look at the totality of studies,
17 there is no doubt.
18 Q. Okay. Back to my question,
19 which was, do you know what medications are
20 administered to a woman in preparation for a
21 cesarean section?
22 And the answer is, you don't
23 know, right?
24 A. People might take
25 acetaminophen, might take other drugs. But

Page 403

1 again, that doesn't change anything about the
2 conclusion of this study.
3 Q. Okay. Ji says, "Because of our
4 observational study design, we were unable to
5 exclude the potential residual confounders
6 because of unmeasured genetic and
7 environmental factors."
8 Do you remember reading that?
9 A. Yes.
10 Q. And Ji believes that, right?
11 A. Where is that?
12 Q. That is in the last page,
13 second to last sentence before the
14 conclusion.
15 A. Okay.
16 Q. Starts with "fourth."
17 A. Uh-huh.
18 Q. You agree this is an
19 observational study design?
20 A. We are using 50 papers that are
21 observational, as you understand. So all of
22 our discussion for seven, eight hours today
23 is about observational studies.
24 Q. So you have no information --
25 you haven't talk to Ji, right?

Page 404

1 A. I haven't talked to Ji.
2 Q. You take Ji at his word that
3 they were unable to exclude the potential
4 residual confounders because of unmeasured
5 environmental factors, right?
6 MR. SNIDOW: Objection to the
7 form.
8 THE WITNESS: You'll have to
9 discuss this with Ji.
10 But what I can say is that I
11 take it very seriously, and I did an
12 analysis in my navigation guide, and
13 that the analysis that I did exclude
14 potential residual confounders,
15 particularly the genetics that have no
16 standing whatsoever. Genetics has
17 absolutely nothing to do with this.
18 And the measured confounders
19 are incredibly unlikely to bias the
20 results and especially to affect my
21 conclusion.
22 QUESTIONS BY MR. MURDICA:
23 Q. Okay. Dr. Baccarelli, when you
24 had that exchange with Dr. Liew, did he
25 tell -- did he agree with you that he has no

Page 405

1 concern about genetics?
2 A. If you want to review the
3 e-mail with me, I'm happy to discuss that in
4 detail.
5 Q. Okay. You today have no
6 concern about genetic confounding, correct?
7 A. So both Zeyan Liew and I agreed
8 that the genetic has been -- a concern has
9 been raised. I was worried, he was worried,
10 and we both agreed together. He confirmed my
11 opinion that genetics was not the explanation
12 for what we are seeing here. The genetics
13 absolutely has nothing to do with this.
14 If you want to discuss
15 genetics, the matter of the subject, I'm
16 happy to discuss why I think that. I put in
17 my report, and I'm happy to give you any
18 information about that.
19 (Baccarelli Exhibit 107 marked
20 for identification.)
21 QUESTIONS BY MR. MURDICA:
22 Q. Dr. Baccarelli, you have in
23 front of you what's been marked as
24 Exhibit 107.
25 Earlier you were telling us

<p style="text-align: right;">Page 406</p> <p>1 about an e-mail exchange that you had with</p> <p>2 Dr. Liew, and I believe you said you had</p> <p>3 reviewed it recently, right?</p> <p>4 A. Correct.</p> <p>5 Q. Okay. And is this that e-mail</p> <p>6 exchange?</p> <p>7 A. Yes.</p> <p>8 Q. Okay.</p> <p>9 A. From June 2nd, so it's not</p> <p>10 very -- yeah.</p> <p>11 Q. This is very recent. This is</p> <p>12 June 2nd of this year, on the eve of you</p> <p>13 providing your expert opinions here, right?</p> <p>14 A. Correct. I was working on</p> <p>15 these, and I wanted to make sure that I</p> <p>16 didn't miss anything about Stergiakouli,</p> <p>17 because they are two papers that both provide</p> <p>18 very little evidence about the role of</p> <p>19 genetics. But one contradicts the other</p> <p>20 without referencing each other, the</p> <p>21 Stergiakouli 2016, I think, and Leppart 2019.</p> <p>22 Q. And if we look at this chain,</p> <p>23 you can confirm for us that you never told</p> <p>24 Dr. Liew that you were working for one side</p> <p>25 of the litigation, correct?</p>	<p style="text-align: right;">Page 408</p> <p>1 I worked for three years and a half in</p> <p>2 genetic epidemiology at the NIH as a postdoc,</p> <p>3 so I formally trained in genetic</p> <p>4 epidemiology.</p> <p>5 Q. Okay. And one of the things</p> <p>6 that you saw that you didn't understand was</p> <p>7 that the polygenic risk score analysis by</p> <p>8 Stergiakouli seemed to explain that</p> <p>9 acetaminophen was not the cause of ADHD in</p> <p>10 that study, right?</p> <p>11 MR. SNIDOW: Objection to the</p> <p>12 form.</p> <p>13 QUESTIONS BY MR. MURDICA:</p> <p>14 Q. It was actually the mediator.</p> <p>15 MR. SNIDOW: Objection to form.</p> <p>16 THE WITNESS: Can you repeat</p> <p>17 that again?</p> <p>18 QUESTIONS BY MR. MURDICA:</p> <p>19 Q. Sure.</p> <p>20 A. I am very confused about all</p> <p>21 these arrows that you are drawing, in my</p> <p>22 mind.</p> <p>23 Q. Well, you decided you need --</p> <p>24 you needed to ask Dr. Liew a question because</p> <p>25 you didn't understand why one of the studies</p>
<p style="text-align: right;">Page 407</p> <p>1 A. Absolutely, I didn't.</p> <p>2 Q. Okay.</p> <p>3 A. But I'm planning to actually</p> <p>4 discuss with him in the future my -- the</p> <p>5 outcome of my work with this because I would</p> <p>6 love to involve him in writing the paper I</p> <p>7 mentioned before.</p> <p>8 Q. Okay. Dr. Baccarelli, one of</p> <p>9 the things you say is that the Baker paper</p> <p>10 came under fire because we did not control</p> <p>11 for genetics, right?</p> <p>12 A. I think I read that in the FDA</p> <p>13 production and perhaps in the J&J production.</p> <p>14 So there were a few -- and obviously there</p> <p>15 were commentaries in the literature also</p> <p>16 published about that.</p> <p>17 And I wanted to make sure I was</p> <p>18 covering all the bases, which, by the way, I</p> <p>19 did. I wrote in my report the genetics is</p> <p>20 not an issue. Genetics absolutely has</p> <p>21 nothing to do with this causation. It's --</p> <p>22 Q. What certifications do you have</p> <p>23 in genetics, Doctor?</p> <p>24 A. I have a postdoc from the</p> <p>25 Division of Cancer Epidemiology at the NIH.</p>	<p style="text-align: right;">Page 409</p> <p>1 seem to suggest that acetaminophen was the</p> <p>2 mediator, not the cause, of ADHD</p> <p>3 relationship.</p> <p>4 Right?</p> <p>5 A. Acetaminophen -- no, I don't</p> <p>6 think I said that, that -- none -- I don't</p> <p>7 think Stergiakouli talks about mediation.</p> <p>8 Q. He talks about polygenic risk</p> <p>9 scores, right?</p> <p>10 A. Correct. Stergiakouli talks</p> <p>11 about polygenic risk scores, and it shows no</p> <p>12 association between genetics for ADHD, I</p> <p>13 believe, in Stergiakouli 2016, and taking</p> <p>14 Tylenol.</p> <p>15 So if the objection here is</p> <p>16 that -- as I say, my paper came under fire on</p> <p>17 the idea that women who have higher genetic</p> <p>18 risk factors for ADHD, and it must meet the</p> <p>19 risk factor to their children, they would</p> <p>20 also take more Tylenol.</p> <p>21 Stergiakouli 2016 shows that it</p> <p>22 is not true. There is no association</p> <p>23 whatsoever between the ADHD genetics -- it</p> <p>24 might be also ASD. Now I don't remember</p> <p>25 exactly what Stergiakouli does.</p>

Page 410

1 But I'm sure that applies also
 2 to ASD, that there is -- there was no
 3 association between having genes in the
 4 mother that can be transmitted to the
 5 children and taking Tylenol.
 6 So if you have genes that
 7 are risk factors for ASD, or supposed to be
 8 risk factors for ASD, these women don't take
 9 more Tylenol.
 10 And particularly Leppart shows
 11 that there is -- this association doesn't
 12 exist for ASD. So all this idea that
 13 genetics is important is based on nothing.
 14 Women who have high risk of ASD
 15 due to being genetic -- having genes that are
 16 a risk for ASD, they don't take more Tylenol.
 17 And this is -- shows in Leppart.
 18 So if they don't take more
 19 Tylenol, genes are not a confounder. Genes
 20 have nothing to do with this, as I mentioned.
 21 Q. Dr. Baccarelli, Leppart finds
 22 that genetics is the issue, right?
 23 A. No.
 24 Q. And that's why -- that's why
 25 you chose to write Dr. Liew?

Page 411

1 MR. SNIDOW: Objection.
 2 THE WITNESS: No. No. Leppart
 3 writes something that is completely
 4 different from Stergiakouli.
 5 QUESTIONS BY MR. MURDICA:
 6 Q. Okay. Were there more or less
 7 alleles identified in 2019 than there were in
 8 2016 associated with ADHD or autism?
 9 MR. SNIDOW: Objection to the
 10 form.
 11 THE WITNESS: The Leppart and
 12 Stergiakouli used two different
 13 reference materials. One is based on
 14 the additional UK studies, and one is
 15 based on a more generalizable data
 16 set, and they still have questions.
 17 By the way, I wrote to
 18 Stergiakouli asking whether they would
 19 explain to me why they used two
 20 reference materials and did not reply.
 21 So at the point, I'm not even
 22 sure whether Leppart is right or
 23 Stergiakouli is right.
 24 Stergiakouli has a point there,
 25 that they use a reference for their

Page 412

1 epigenetic score that these -- that is
 2 based on UK and the Irish. They seem
 3 to be use a European database that
 4 might even be less applicable in
 5 Leppart.
 6 By the way, Leppart, which is
 7 the newer one that you say perhaps had
 8 more genes, shows no association with
 9 the ASD. Genes for -- with
 10 acetaminophen.
 11 Genes for ASD, women who have
 12 genes for ASD in their -- in their DNA
 13 don't take more acetaminophen. All
 14 this argument that genetics --
 15 genetics is important for ASD
 16 causation due to acetaminophen is
 17 based on zero data. But it's zero,
 18 meaning zero close to zero zero.
 19 QUESTIONS BY MR. MURDICA:
 20 Q. How about ADHD, Doctor? Is
 21 that what Leppart said with regard to ADHD?
 22 A. What Leppart says is that there
 23 is a very weak association between having
 24 genes for ADHD and taking acetaminophen.
 25 If you have the paper, I'm

Page 413

1 happy to discuss it with you.
 2 Q. Okay. Later in the e-mail,
 3 Dr. Liew replies. First he had an error in
 4 his reply, and he deleted some, and it looks
 5 like he sent it again.
 6 Right?
 7 A. Yeah, I didn't even notice at
 8 the time. I read just the last one.
 9 Q. And he says, "I also have been
 10 worrying about genetic confounding because my
 11 analyses of the Danish National Birth Cohort
 12 did not have genetic data and that we did
 13 observe a considerable drop in effect size
 14 when adjusting for maternal mental illness."
 15 You saw that, right, at the
 16 time?
 17 A. Correct.
 18 Q. And I read that correctly now,
 19 right?
 20 A. Correct.
 21 Q. Okay. And so all of the Liew
 22 studies --
 23 MR. SNIDOW: Sorry, Jim, I'm
 24 lost. Where are you?
 25 MR. MURDICA: I'm at the top of

<p style="text-align: right;">Page 414</p> <p>1 14578.</p> <p>2 MR. SNIDOW: Okay. Thank you.</p> <p>3 QUESTIONS BY MR. MURDICA:</p> <p>4 Q. The Liew studies, and any study</p> <p>5 that analyzed the Danish National Birth</p> <p>6 Cohort, couldn't control for genetic</p> <p>7 confounding, and here Liew is telling you</p> <p>8 they actually saw a drop when they adjusted</p> <p>9 for maternal mental illness.</p> <p>10 A. I believe that's in their</p> <p>11 paper, is it?</p> <p>12 Q. Right.</p> <p>13 And remember I was asking you</p> <p>14 before if you accounted for maternal mental</p> <p>15 illness?</p> <p>16 A. This has been looked in tens of</p> <p>17 papers. There are tens of papers adjusted</p> <p>18 for maternal mental illness. Maternal mental</p> <p>19 illness is not the problem.</p> <p>20 Q. And he says -- well, your</p> <p>21 opinion that maternal mental illness is not</p> <p>22 the problem, right?</p> <p>23 MR. SNIDOW: Object. Objection</p> <p>24 to form.</p> <p>25 THE WITNESS: Let me rephrase</p>	<p style="text-align: right;">Page 416</p> <p>1 little evidence that genes have anything to</p> <p>2 do with this.</p> <p>3 So he said -- I was worried</p> <p>4 because the illness. I looked at the genetic</p> <p>5 data. The genetic data took my -- my</p> <p>6 concerns addressed. You can see that in that</p> <p>7 e-mail.</p> <p>8 Q. Did you see that Dr. Liew is</p> <p>9 saying they're now collecting some -- they</p> <p>10 have some polygenic risk score data for ADHD</p> <p>11 and ASD in the DNBC, but it's rather</p> <p>12 challenging to use genetic data, and he's</p> <p>13 trying to hopefully inform the debate?</p> <p>14 A. It would be wonderful if they</p> <p>15 did. At the same time, based on the evidence</p> <p>16 that I reviewed with you, again, Stergiakouli</p> <p>17 shows no association between genes for ADHD</p> <p>18 and taking acetaminophen. So women who have</p> <p>19 higher genetic risk scores for ADHD takes no</p> <p>20 more acetaminophen.</p> <p>21 Leppart suddenly shows a weak</p> <p>22 association.</p> <p>23 And also I have to say, they</p> <p>24 also adjust -- in Stergiakouli they also</p> <p>25 adjust the association between acetaminophen</p>
<p style="text-align: right;">Page 415</p> <p>1 that.</p> <p>2 Maternal mental illness is not</p> <p>3 artificially causing the association</p> <p>4 that we see between acetaminophen and</p> <p>5 ADHD, ASD and other neurodevelopmental</p> <p>6 disorders.</p> <p>7 QUESTIONS BY MR. MURDICA:</p> <p>8 Q. Why didn't you tell Dr. Liew</p> <p>9 that when you wrote back?</p> <p>10 A. Because we were discussing</p> <p>11 genetics, and Dr. Liew seemed to be pretty</p> <p>12 confident about his results.</p> <p>13 We are talking about genetics,</p> <p>14 and Dr. Liew concurred with me that genetics</p> <p>15 is not a problem. So he clearly leaves --</p> <p>16 that derives, at least in my mind -- if I'm</p> <p>17 wrong, I'm happy to be corrected -- that he</p> <p>18 was also not that worried in the end about</p> <p>19 mental illness. Because, again, genes have</p> <p>20 nothing to do with this. There's really very</p> <p>21 little you can say about genes.</p> <p>22 Q. He told you he was not that</p> <p>23 worried about maternal mental illness?</p> <p>24 A. No. He told me -- he concurred</p> <p>25 with me that there is no -- there is very</p>	<p style="text-align: right;">Page 417</p> <p>1 and the hyperactivity for the genes. So</p> <p>2 really -- they really put the confounders in</p> <p>3 the model and shows that their results are</p> <p>4 still there.</p> <p>5 So APAP cause hyperactivity,</p> <p>6 actually ADHD with hyperactivity,</p> <p>7 independently of the polygenic risk score and</p> <p>8 depending on the genes.</p> <p>9 Leppart shows a small</p> <p>10 association within -- between polygenic risk</p> <p>11 scores for ADHD and acetaminophen, and again</p> <p>12 shows no association whatsoever with autism.</p> <p>13 So all these genes of autism</p> <p>14 that people say are so important for -- those</p> <p>15 are genes for autism and not for ADHD. I</p> <p>16 think you would agree that the genetic</p> <p>17 component of ADHD is somehow smaller than the</p> <p>18 one for autism.</p> <p>19 So the concern is much bigger</p> <p>20 for autism. And guess what, women who --</p> <p>21 women who have higher risk scores, genetics,</p> <p>22 for autism take the same acetaminophen as</p> <p>23 women who don't. So there is -- there is no</p> <p>24 case with genetics. I'm sorry.</p> <p>25 Q. Doctor, I asked you about</p>

<p>Page 418</p> <p>1 Dr. Liew's additional data he's getting.</p> <p>2 Have you talked to him since</p> <p>3 this e-mail chain?</p> <p>4 A. No.</p> <p>5 Q. So you don't know if he's --</p> <p>6 how the review of that data is coming out?</p> <p>7 A. If you like to talk to him, I</p> <p>8 mean, you can.</p> <p>9 Q. In talking about Leppart, you</p> <p>10 say, "It seems they use some arbitrary</p> <p>11 cutoff, and I am still worried that if they</p> <p>12 used it as a continuous numerical scale they</p> <p>13 could have gotten stronger associations."</p> <p>14 A. Uh-huh.</p> <p>15 Q. Those were your words, right?</p> <p>16 A. Absolutely.</p> <p>17 Q. You were concerned that if</p> <p>18 Leppart had used a different scale, they</p> <p>19 would have found an even stronger association</p> <p>20 with genetics, which would go against what</p> <p>21 you had already determined at this point was</p> <p>22 a causal relationship, right?</p> <p>23 MR. SNIDOW: Object to form.</p> <p>24 THE WITNESS: I hadn't finished</p> <p>25 my analysis yet. I was still</p>	<p>Page 420</p> <p>1 wanted to.</p> <p>2 QUESTIONS BY MR. MURDICA:</p> <p>3 Q. Had you just found Leppart at</p> <p>4 that time, when you e-mailed Dr. Liew?</p> <p>5 A. No. I found Leppart much</p> <p>6 before. I found Leppart with the papers when</p> <p>7 I did my PubMed search and the other searches</p> <p>8 in March.</p> <p>9 Q. Dr. Baccarelli, your name was</p> <p>10 on another paper with Dr. Baker in 2022</p> <p>11 titled "Association of Prenatal Acetaminophen</p> <p>12 Exposure Measured in Meconium With Adverse</p> <p>13 Birth Outcomes."</p> <p>14 Right?</p> <p>15 A. Yes.</p> <p>16 Q. And that was just looking at</p> <p>17 non-neurological adverse outcomes, right?</p> <p>18 A. I think so.</p> <p>19 (Baccarelli Exhibit 108 marked</p> <p>20 for identification.)</p> <p>21 QUESTIONS BY MR. MURDICA:</p> <p>22 Q. Doctor, you should now have in</p> <p>23 front of you what's been marked as</p> <p>24 Exhibit 108.</p> <p>25 Do you recognize Exhibit 108?</p>
<p>Page 419</p> <p>1 considering all the objections.</p> <p>2 So I did -- I got my final</p> <p>3 analysis and my final determination</p> <p>4 after this e-mail. So this was part</p> <p>5 of my final determination on how to</p> <p>6 assess genetics. I was trying to</p> <p>7 figure out exactly how to assess</p> <p>8 genetics, and this was really helpful</p> <p>9 because it really helped me to</p> <p>10 understand -- to shed light on genes.</p> <p>11 And genes have nothing to do with the</p> <p>12 causation between ADHD -- between</p> <p>13 acetaminophen and disease.</p> <p>14 QUESTIONS BY MR. MURDICA:</p> <p>15 Q. Okay. So this Stergiakouli and</p> <p>16 Leppart issue that you identified to Dr. Liew</p> <p>17 starting on May 29th, at that point you</p> <p>18 hadn't made your causal determination between</p> <p>19 acetaminophen and the outcomes of ADHD and</p> <p>20 ASD, correct?</p> <p>21 MR. SNIDOW: Objection to the</p> <p>22 form.</p> <p>23 THE WITNESS: I hadn't still</p> <p>24 finished my report, so I was still in</p> <p>25 time to change my determination if I</p>	<p>Page 421</p> <p>1 A. Yes.</p> <p>2 Q. And this is another meconium</p> <p>3 study, right?</p> <p>4 A. Yes.</p> <p>5 Q. Okay. And this is something</p> <p>6 with your name on it, right?</p> <p>7 A. Correct.</p> <p>8 Q. Okay. If you turn to page 6.</p> <p>9 Now this is in April of 2022,</p> <p>10 right?</p> <p>11 A. Uh-huh.</p> <p>12 Q. Okay. Page 6, if you look on</p> <p>13 the right-hand column, the first full</p> <p>14 paragraph, you wrote, "While the associations</p> <p>15 of prenatal acetaminophen exposure with</p> <p>16 adverse birth outcomes found here may be</p> <p>17 concerning, more studies in a diverse range</p> <p>18 of cohorts are needed before suggesting a</p> <p>19 change in clinical practice."</p> <p>20 Those are your words, right,</p> <p>21 Doctor?</p> <p>22 A. Where is it? Sorry, where is</p> <p>23 it?</p> <p>24 So we are talking about</p> <p>25 something different here. There is neonatal</p>

<p style="text-align: right;">Page 422</p> <p>1 development here, correct? So we are talking 2 about birth weight, preterm weight, 3 gestational age, small and large for 4 gestational age, gestational diabetes, 5 preeclampsia and high blood pressure. So 6 this is not related to the discussion today. 7 Q. Okay. So you're not -- you're 8 not considering autism or ADHD or 9 neurodevelopmental disorders as adverse birth 10 outcomes here? 11 MR. SNIDOW: Objection to the 12 form. 13 THE WITNESS: So this is 14 written in the -- so birth outcome is 15 an outcome typically that can be 16 measured at birth. So I think we 17 agree that we cannot measure autism or 18 ADHD at birth or during pregnancy. 19 It seems like that we also have 20 here -- we put under the umbrellas a 21 few outcomes that are not just birth 22 outcomes but also pregnancy 23 complications. So the title should 24 have been pregnancy complications and 25 birth outcomes.</p>	<p style="text-align: right;">Page 424</p> <p>1 that in April 2022 -- well, let's do some 2 foundation. 3 In April of 2022, did you 4 believe that acetaminophen caused adverse 5 neurological outcomes when there was in utero 6 exposure? 7 A. In April 2022, I was pretty 8 convinced that there was a problem. 9 Q. Okay. Notwithstanding that you 10 were convinced there was a problem, you put 11 words in a published paper in April 2022 that 12 more data was needed before there was a 13 change in clinical practice with respect to 14 acetaminophen, but only with respect to other 15 birth outcomes. 16 That's your testimony, right? 17 MR. SNIDOW: Objection to form. 18 THE WITNESS: So as you see at 19 the end of this paper, we say that we 20 want more work for this about -- but 21 it's not related to NDDs. 22 If I had written a paper on 23 neurodevelop -- on NDDs at the time, I 24 would have used a different statement. 25 This statement can be read only</p>
<p style="text-align: right;">Page 423</p> <p>1 And the birth outcomes here are 2 birth weight, preterm birth, and small 3 and large for gestational age. 4 QUESTIONS BY MR. MURDICA: 5 Q. Okay. In April 2022, 6 Dr. Baccarelli would not suggest a change in 7 clinical practice as it relates to prenatal 8 acetaminophen exposure, correct? 9 A. I didn't say that. The paper 10 doesn't say that. 11 It just says there is -- that 12 we published the result on something that has 13 nothing to do with neurodevelopment, and this 14 data are not enough to tell people that all 15 the kids are both small or large, and all the 16 kids are -- and that acetaminophen is causing 17 gestational diabetes, it's causing eclampsia, 18 it's causing preterm birth, it's causing high 19 blood pressure in the mother. 20 Q. Okay. 21 A. So this paper has very 22 little -- very little to do with what we are 23 discussing today. 24 Q. I just want to understand your 25 testimony, for the world that reads this, is</p>	<p style="text-align: right;">Page 425</p> <p>1 in relation to the birth outcomes, 2 which again are at birth. So 3 everything I say in this paper applies 4 to birth outcomes. 5 I mean, I agree with you that 6 this statement, perhaps, would have 7 been to be qualified more, so probably 8 if I -- if after you made this 9 objection I would have the opportunity 10 to rewrite this paper, I would 11 probably rewrite it in a way that is 12 more qualified related to high blood 13 pressure of the mother, related to low 14 birth weight, related to high birth 15 weight, related to gestational age. 16 So that is what I will say 17 there. I would be happy to write this 18 statement if I had the opportunity to 19 do it now. Perhaps it's not the most 20 accurate statement I've ever written. 21 QUESTIONS BY MR. MURDICA: 22 Q. Dr. Baccarelli, you don't -- 23 A. But I think you understand in 24 the context of the paper what this means. I 25 mean, I get --</p>

Page 426

1 Q. You want the people reading
2 this transcript to believe that you thought
3 acetaminophen caused autism and ADHD, but you
4 still weren't changing clinical practice in
5 2022 with respect to other adverse birth
6 outcomes, right?

7 MR. SNIDOW: Objection to the
8 form.

9 THE WITNESS: Again, you can
10 pick out a sentence out of a paper,
11 but the paper is pretty clear we are
12 talking only about certain outcomes.
13 And what I -- what this statement is
14 meant to be is to say that the
15 evidence we are providing in this
16 single paper about something that has
17 nothing to do with neurodevelopment is
18 not enough to influence practice.
19 Other types of evidence can.

20 QUESTIONS BY MR. MURDICA:

21 Q. Okay. Doctor, there was a
22 Baker 2023 article as well that you
23 referenced earlier, right?

24 A. Yes, I believe so.

25 Q. That was the second part of the

Page 427

1 dissertation proposal that you helped Brennan
2 Baker, right?

3 A. No. They -- Brennan was
4 supervised by two scientists. One is me, and
5 one is Brandon Pearson. So for that part of
6 the dissertation, it was under Brandon
7 Pearson's supervision.

8 And you had an opportunity to
9 speak with Brandon, so I'm sure he would --
10 if you asked him, he would have told you all
11 about the paper.

12 Q. Okay. It was part of the
13 proposal that Baker made to you for --
14 prior to him getting his degree, correct?

15 A. He didn't make it to me. He
16 make it to the -- to the school.

17 Q. Okay.

18 A. And he made it to the two PIs,
19 two principal investigators, who supervised
20 him.

21 So for that part of the study,
22 I completely deferred to Brandon. I don't do
23 animal studies, so --

24 Q. You don't recall reviewing
25 his targeted outcomes for his dissertation

Page 428

1 and one of them being an animal study?

2 A. Oh, I did review the outcome,
3 but, again, we are a team, and that was under
4 Brandon Pearson's supervision, not mine.
5 (Baccarelli Exhibit 109 marked
6 for identification.)

7 QUESTIONS BY MR. MURDICA:

8 Q. Okay. I'm marking Baker 2023.
9 Okay. Now, Doctor, you now
10 have in front of you what's been marked as
11 Exhibit 109?

12 A. Uh-huh.

13 Q. Do you recognize this as
14 Baker's animal study from 2023?

15 A. Yes.

16 Q. Okay. And you see up top it
17 says 2023?

18 A. It does.

19 Q. Now, if you look at the
20 introduction, the second paragraph -- by the
21 way, it's -- Pearson is also on this.
22 You said that, right?

23 Dr. Pearson?

24 A. Yes, Pearson is the senior
25 author and the supervisor of Baker for this

Page 429

1 paper.

2 Q. Okay. So he reviewed this --
3 in your lab, in your group, you expect other
4 doctors and scientists to review their papers
5 before they go out to the publication, right?

6 A. I do review papers. I hope
7 Brandon does as well.

8 Q. Okay.

9 A. I'm not in his lab. As I said,
10 he's in a different lab. He's the director
11 of his own lab. I'm the director of my own
12 lab.

13 Q. Did you look at this one before
14 it went for publication? Do you know?

15 A. I don't think so.

16 Q. Okay. Do you see the second
17 paragraph? It says, "Despite such widespread
18 use, evidence from human observational
19 studies suggests that prenatal APAP exposure
20 may be associated with ADHD."

21 A. Yes.

22 Q. Okay. That doesn't say cause,
23 right?

24 MR. SNIDOW: Object to form.
25 THE WITNESS: I think it's

<p>Page 430</p> <p>1 pretty similar. Maybe associated 2 doesn't say. It is 50 percent. Is it 3 more? 4 It doesn't say we are 5 100 percent sure this is absolutely 6 causal, but it says there is a lot 7 of -- there is a lot of papers that 8 are consistent with causality, 9 correct? 10 QUESTIONS BY MR. MURDICA: 11 Q. Well, you're sitting here today 12 saying it's causal, right, Doctor? 13 A. Absolutely. 14 Q. Okay. 15 A. And again, I did not write this 16 paper, so I cannot -- 17 Q. Right. 18 You're not on this paper. 19 A. I cannot be responsible for 20 whatever Brandon and Brennan wrote here. 21 At the same time, I have to 22 say, as I read it today, this is -- evidence 23 from human observational studies suggest that 24 APAP exposure prenatally may be associated 25 with attention-deficit/hyperactivity</p>	<p>Page 432</p> <p>1 question. So you disagree with them on that 2 one. 3 And then it says, "Furthermore, 4 a sibling study that examined unmeasured 5 familial confounding in the Norwegian 6 national cohort found a substantial family 7 effect, suggesting that unmeasured familial 8 factors, including genetics, may partially 9 explain the association between APAP use with 10 child ADHD." 11 And it cites Gustavson, right? 12 A. Yeah. And that is really wrong 13 because there are two studies only with 14 sibling-control designs. And again, sibling 15 controls are really -- are really difficult 16 to do because siblings are very similar to 17 each other. So when you use siblings as 18 control, you run the risk of any association 19 going away. 20 So first of all, Gustavson is 21 the smallest study in the literature. You 22 argued about my study. That's a study with 23 only 34, perhaps, informative units. 34 in 24 total, I mean, and using a yes/no 25 classification of acetaminophen,</p>
<p>Page 431</p> <p>1 disorder. So I leave it up -- 2 Q. You would disagree with them, 3 right? You would say, actually it's causal, 4 right? 5 MR. SNIDOW: Objection to the 6 form. 7 THE WITNESS: What I -- what I 8 would say today, as I sit here after 9 having been done the navigation guide 10 analysis and looking at -- that it's 11 more likely than not, and it's 12 reasonable that -- the only reasonable 13 explanation to all the associations, 14 including dose, explained here is that 15 the association is causal. 16 QUESTIONS BY MR. MURDICA: 17 Q. Okay. And if you look in the 18 next column, the last sentence, it says, "For 19 instance, maternal polygenic risk scores for 20 ADHD are associated with use of APAP during 21 late pregnancy," citing Leppart, "indicating 22 a strong potential for genetic confounding." 23 Do you see that? 24 A. I would disagree with that. 25 Q. Yeah. That was going to be my</p>	<p>Page 433</p> <p>1 self-reported. So much less power than any 2 study I ever did, including the one with 120 3 that we agreed is a small study. 4 Plus, the association is weak. 5 Plus, I have to say, it's 6 really impressive that another study from the 7 same group as Gustavson, the data by 8 Brandlistuen, all do expect the sibling 9 studies to make every association within 10 acetaminophen and neurodevelopment go away, 11 the sibling-control study actually did show 12 an association. 13 So you have a design that is 14 likely to produce false negatives, and 15 everyone would expect it to produce false 16 negatives, and instead it produces a true 17 positive. 18 So you can understand that 19 sibling-control studies are actually pretty 20 strong. I would differ with what they wrote 21 here. And this is something, honestly, I 22 started to understand only recently by 23 looking at the papers and reading them. 24 Q. You disagree with your 25 colleagues, right?</p>

Page 434

1 That was my question, and you
 2 just gave a long answer.
 3 MR. SNIDOW: Objection to the
 4 form.
 5 THE WITNESS: The answer -- the
 6 answer is that I disagree that the
 7 genetic confounding is an issue here.
 8 QUESTIONS BY MR. MURDICA:
 9 Q. Okay.
 10 A. There is no evidence in the
 11 literature that genetic confounding is
 12 causing the problem here. Acetaminophen is.
 13 Q. Would you look at page 11,
 14 please?
 15 A. (Witness complies.)
 16 Q. Now, when did you find out that
 17 Dr. Pearson was working with the plaintiffs'
 18 lawyers on this case?
 19 A. I think in March when we met at
 20 the Society of Toxicology, he mentioned that
 21 he was working with the lawyers.
 22 Q. Okay. Do you see the
 23 declaration of competing interests here on
 24 the left-hand column?
 25 A. Okay.

Page 435

1 Q. There's no disclosures, right?
 2 A. Okay.
 3 Q. Okay. If Dr. Pearson was
 4 working for the plaintiffs' lawyers at this
 5 point in this litigation when this was
 6 published in 2023, would you expect him, when
 7 performing studies on acetaminophen, to
 8 disclose that he was being paid in a
 9 litigation over acetaminophen?
 10 MR. SNIDOW: Objection to the
 11 form.
 12 THE WITNESS: I have to say, do
 13 you know when this paper came out?
 14 The paper was received in
 15 August 2022, was accepted 18
 16 December 2022. So the disclosure was
 17 probably filed 18 December 2022. Or
 18 usually it's filed at the time the
 19 paper is submitted.
 20 So you will have to ask the
 21 lawyers here whether in August 18,
 22 2022, that Dr. Pearson had already
 23 been retained.
 24 QUESTIONS BY MR. MURDICA:
 25 Q. If he had been retained, you'd

Page 436

1 expect him to disclose that, right?
 2 MR. SNIDOW: Objection to the
 3 form.
 4 THE WITNESS: I -- that is
 5 something to ask him. It's up to
 6 individual scientists to decide what
 7 represents a conflict of interest.
 8 Anyone has their own judgment,
 9 and I trust Dr. Pearson to have good
 10 judgment.
 11 By the way, Dr. Pearson is one
 12 of the most conscientious people I've
 13 ever met in my life. You can be sure
 14 that he would -- he has done due
 15 diligence.
 16 QUESTIONS BY MR. MURDICA:
 17 Q. You don't -- in your position
 18 in Mailman, you don't have any views on
 19 whether the other -- your other colleagues
 20 need to follow the financial disclosure
 21 requirements or not.
 22 Is that your testimony?
 23 MR. SNIDOW: Objection to the
 24 form.
 25

Page 437

1 QUESTIONS BY MR. MURDICA:
 2 Q. That it's up to them?
 3 A. I have a view that Columbia
 4 requires a finance -- disclose whenever we
 5 get by anyone else than Columbia. That
 6 doesn't get reported to me.
 7 So I hope Dr. Pearson did
 8 disclose it, but I'm not supervising
 9 Dr. Pearson for that aspect nor whether he
 10 writes this or not in the report. So, I
 11 mean, that is something that has very little
 12 to do with me and my opinions. Has very
 13 little bearing on the situation.
 14 Q. Okay. Doctor, have you ever
 15 looked at the Bandoli study?
 16 A. I read it. I think so.
 17 Q. Okay. Well, let me see if I
 18 need to mark it.
 19 You saw that Bandoli found that
 20 women who had long-term use of acetaminophen
 21 had almost three times the prevalence of
 22 depression, four times prevalence of anxiety,
 23 three times the prevalence of other mental
 24 health disorders.
 25 Do you remember anything like

Page 438

1 that?

2 MR. SNIDOW: Objection to the

3 form.

4 THE WITNESS: I'd like to

5 review that paper, if you don't mind.

6 QUESTIONS BY MR. MURDICA:

7 Q. Okay. Do you have it with you?

8 A. No, I don't think so.

9 (Baccarelli Exhibit 110 marked

10 for identification.)

11 QUESTIONS BY MR. MURDICA:

12 Q. Okay. I'll mark it.

13 A. Okay.

14 MR. SNIDOW: I'm sorry. This

15 is 110?

16 THE WITNESS: 110.

17 MR. SNIDOW: Okay. Thank you.

18 QUESTIONS BY MR. MURDICA:

19 Q. Doctor, do you remember

20 reviewing this now?

21 A. Yes.

22 Q. Okay. Did you see that the

23 women who used acetaminophen are quite

24 different?

25 A. Where is that?

Page 439

1 MR. SNIDOW: Objection to the

2 form.

3 QUESTIONS BY MR. MURDICA:

4 Q. Well, you -- your testimony is

5 that the cutoff of 28 days of use in

6 pregnancy is -- it's meaningful, right?

7 People who use it for more than

8 28 days in pregnancy have a stronger

9 relationship with the outcomes, right?

10 A. That is reported on many

11 papers.

12 Q. Okay.

13 A. Many papers use 28 as a cutoff,

14 and you see a dose-response relationship. So

15 when you get more acetaminophen, more days,

16 you get stronger effects.

17 Q. And those 20 --

18 A. I wouldn't say that less than

19 28 is perfectly safe. I mean, of course

20 with -- 28 is not a magic number.

21 Q. Okay. And the 28, you -- when

22 you look at those studies, you don't know in

23 general if it was 28 days in a row at some

24 point or spaced out. There's not exact

25 dates --

Page 440

1 A. There is a lot of different

2 analysis. So 28 is the total number of --

3 Q. Right.

4 A. -- the days during pregnancy.

5 But studies have looked at individual

6 trimesters, and there is no difference across

7 trimesters. They're precise, exactly the

8 same and so on.

9 So there's a wealth of data.

10 The data have been sliced every way you can.

11 So if you have a specific question, I can

12 perhaps help you to find the answer.

13 Q. Well, they've been sliced every

14 way you can without actually having the dates

15 of use, right?

16 No study had the exact dates

17 and lengths of using during pregnancy?

18 MR. SNIDOW: Objection to form.

19 THE WITNESS: That is not true.

20 There are --

21 MR. SNIDOW: I'm sorry. I'm

22 sorry. Objection to form.

23 THE WITNESS: That is not true.

24 There are -- there is many studies

25 that have rich information about the

Page 441

1 exposure to acetaminophen over time,

2 and the number of days is the most

3 reliable way to ask the question.

4 So if you ask number of days,

5 women are likely to report that more

6 accurately than asking other type of

7 information.

8 QUESTIONS BY MR. MURDICA:

9 Q. Okay. So it's your testimony

10 that you can point to a study that has the

11 exact day during pregnancy that acetaminophen

12 was taken?

13 A. I don't need that

14 information --

15 Q. That was my question.

16 A. -- so I wouldn't look for it,

17 and no one does it.

18 Q. Okay. It doesn't exist, right?

19 A. That information is not needed

20 in this situation.

21 Q. Okay.

22 A. So I wouldn't be able to tell

23 you whether that did exist or not because I

24 didn't look for it.

25 Q. You didn't see it?

Page 442

1 A. I was not interested, and it
2 didn't matter for my opinion.
3 Q. Okay. I understand that.
4 You didn't see -- you didn't
5 see that data, though, right?
6 MR. SNIDOW: Objection to form.
7 THE WITNESS: As I stand here
8 today, I cannot recall that data.
9 QUESTIONS BY MR. MURDICA:
10 Q. Okay.
11 A. But at the same time, it's not
12 relevant to my -- to my opinion.
13 Q. I understand you feel that way,
14 Doctor.
15 If you look at Exhibit 110 --
16 MR. SNIDOW: Objection to the
17 form.
18 QUESTIONS BY MR. MURDICA:
19 Q. -- which is in front of you,
20 did you see that the women who were high
21 users of acetaminophen had a much different
22 mental health --
23 MR. SNIDOW: Where are you
24 looking, Jim?
25 THE WITNESS: Where is that?

Page 443

1 QUESTIONS BY MR. MURDICA:
2 Q. This is Exhibit 110.
3 MR. SNIDOW: Where?
4 MR. MURDICA: Well, it's all
5 throughout.
6 MR. SNIDOW: Well, what are you
7 reading?
8 MR. MURDICA: I'm reading
9 page 8.
10 MR. SNIDOW: Okay.
11 THE WITNESS: Page 8?
12 Okay. What is it?
13 QUESTIONS BY MR. MURDICA:
14 Q. Well, there's a statement here
15 based on their study that says compared with
16 women who did not use acetaminophen, women
17 who used acetaminophen were more than 40 --
18 for more than 44 days had almost three times
19 the prevalence of self-reported depression,
20 four times --
21 A. Where is it?
22 Q. It's the middle of the page.
23 A. Sorry.
24 Q. Sorry, Doctor, I thought you
25 had reviewed this.

Page 444

1 MR. SNIDOW: Objection to form.
2 THE WITNESS: I really said I
3 read it. I didn't memorize it by
4 heart.
5 Can you tell me what they're
6 talking about here? Is it data? Is
7 it -- I really -- I really don't --
8 don't remember this paper that well.
9 QUESTIONS BY MR. MURDICA:
10 Q. Okay. It's okay, Doctor.
11 A. I want to say on that -- that
12 if you're arguing that there is a genetic
13 confounding here because of mental illness,
14 there is not. This has been shown over and
15 over again.
16 MR. MURDICA: That's okay.
17 Let's take a break. I'll organize my
18 last questions and last exhibits.
19 MR. SNIDOW: So off the record.
20 VIDEOGRAPHER: The time right
21 now is 5:04 p.m. We are off the
22 record.
23 (Off the record at 5:04 p.m.)
24 VIDEOGRAPHER: The time right
25 now is 5:19 p.m. We are back on the

Page 445

1 record.
2 MR. MURDICA: Are we good now?
3 MR. SNIDOW: (Nods head.)
4 MR. MURDICA: Okay.
5 QUESTIONS BY MR. MURDICA:
6 Q. Dr. Baccarelli, welcome back.
7 Are you ready to proceed?
8 A. Yes, please.
9 Q. Okay. I asked you earlier if
10 you considered yourself an expert in
11 neurodevelopment, and you said yes.
12 Do you recall that?
13 A. I'm an expert on the
14 epidemiology on neurodevelopment, so I
15 definitely -- I am qualified to publish
16 papers first on neurodevelopment. I
17 published, I think, 15 papers that have to do
18 with neurodevelopment.
19 And of course I'm not a
20 neuropsychiatrist, so I don't -- I don't have
21 expertise in making clinical diagnosis. I
22 have -- I haven't done clinical diagnosis
23 myself.
24 Q. When you're not in litigation,
25 what you tell people is that you're an expert

Page 446

1 in molecular epi, correct?

2 A. Say that again?

3 Q. When you're not being paid in a

4 litigation, you tell people that you are an

5 expert in molecular epi, correct?

6 MR. SNIDOW: Objection to the

7 form.

8 THE WITNESS: You know, I have

9 a lot of expertise. I can -- as

10 you -- as you understand, I trained in

11 multiple disciplines. The strength of

12 my training is really that I've done a

13 lot of different work in different

14 areas.

15 QUESTIONS BY MR. MURDICA:

16 Q. Okay. So can you answer my

17 question?

18 MR. SNIDOW: Objection to the

19 form.

20 THE WITNESS: So I trained as a

21 physician. I'm a medical doctor.

22 I -- so I'm a physician.

23 I trained in internal medicine.

24 I trained in toxicology. I trained in

25 genetic epidemiology. And I've done

Page 447

1 extensive work on the part of

2 different type of chemicals and

3 toxicants on the fetus.

4 QUESTIONS BY MR. MURDICA:

5 Q. Okay.

6 A. And of course some part of this

7 work is on genes, epigenetics, and how

8 chemicals impact the fetus, including the

9 brain.

10 Q. Dr. Baccarelli, my question

11 was, when you're not in litigation, you tell

12 people that your expertise is in molecular

13 epi, right?

14 MR. SNIDOW: Objection to the

15 form.

16 THE WITNESS: When I'm not

17 in -- if I were not -- if I were not

18 here under oath and -- even more or

19 less tell the truth under oath.

20 But if I were with a colleague

21 at the bar and say -- the people will

22 tell -- will tell me, do you have

23 expertise in neuroepidemiology, I

24 would say yes --

25

Page 448

1 QUESTIONS BY MR. MURDICA:

2 Q. Okay.

3 A. -- because I published several

4 papers on that. So, I mean, there is

5 something that I could do.

6 At the same time, I defer to

7 colleagues who are more experienced than me.

8 (Baccarelli Exhibit 111 marked

9 for identification.)

10 QUESTIONS BY MR. MURDICA:

11 Q. Oh, okay. Well, let's mark

12 this as Exhibit 111.

13 Dr. Baccarelli, I'm marking one

14 of your e-mails as Exhibit 111. And if you

15 turn to page 3, which has 362 on the

16 bottom --

17 A. Uh-huh.

18 Q. -- you say, "One question."

19 Do you see that up top, the

20 second paragraph?

21 A. Absolutely.

22 Q. Do you see you say -- this

23 is -- you're telling Brennan Baker this,

24 right, when he's going for his dissertation?

25 A. No, this is about the grant.

Page 449

1 Q. Right.

2 A. He's writing a grant to support

3 his studies. So we are going to -- we are

4 deciding where to go with this grant.

5 He's writing a grant

6 application. It was just called an F51.

7 Q. And that's for his disser --

8 that's for his dissertation, right?

9 A. To support his work in his

10 dissertation.

11 Q. Yeah, okay.

12 And what you say is, "Brennan,

13 my expertise is in molecular epi, and aim 1

14 and 2 are more into neurodevelopment. I'm

15 wondering whether you need a mentor such as,"

16 and you list two other doctors.

17 A. Exactly, who are colleagues who

18 are --

19 Q. Okay.

20 A. -- part of my papers that I

21 rely to. And therefore what I'm saying is

22 that please make sure that when you go to

23 submit the grant, because reviewers can be

24 inquisitive and nasty, be sure you have

25 someone who's a card-carrying

<p style="text-align: right;">Page 450</p> <p>1 neurodevelopmental person who is a 2 neuropsychiatrist. Because if they don't see 3 any neuropsychiatrists in your grant, they 4 are going to kill you. 5 Q. Okay. 6 A. So it's not about whether I'm 7 experienced or not enough to publish a paper 8 or to review the literature. It's whether 9 the study section will think that -- that I 10 can be -- I can be enough for Brennan to get 11 the grant. 12 Because if they don't have a 13 neuropsychiatrist who can vouch for the rest 14 of the study how clinical diagnosis is done, 15 how brains MRIs, I have no problem to say 16 that I cannot analyze brain MRI data. I 17 cannot read them. 18 And the grant was about brain 19 MRI. He needs a brain MRI person there. 20 It's not me. 21 (Baccarelli Exhibit 112 marked 22 for identification.) 23 QUESTIONS BY MR. MURDICA: 24 Q. Okay. Doctor, we're going to 25 mark another exhibit.</p>	<p style="text-align: right;">Page 452</p> <p>1 this is one of the ones you assessed on the 2 navigation guide, right? 3 A. I think so, you're right. 4 Q. Okay. Do you recall that the 5 three levels of exposure to acetaminophen 6 were rated as never -- 7 That one's easy, right? 8 A. Uh-huh. 9 Q. Sporadic? 10 A. Uh-huh. 11 Q. And persistent? 12 A. Uh-huh. 13 Q. All right. Now, I asked you 14 questions earlier about the notation of 15 exactly when people took -- mothers took 16 acetaminophen during pregnancy, and here it 17 was sporadic if there was some exposure in 18 one or two trimesters but not all three, 19 right? 20 A. Uh-huh. 21 Q. And it was persistent if there 22 was some exposure, even one pill, in all 23 three, right? 24 A. I'm not sure it's even one 25 pill, but you might be right.</p>
<p style="text-align: right;">Page 451</p> <p>1 Doctor, you now have in front 2 of you what's been marked as Exhibit 111? 3 MR. SNIDOW: I think 112. 4 QUESTIONS BY MR. MURDICA: 5 Q. 112? 6 A. 112, yes. 7 Q. Do you recognize that? 8 A. Yeah, it's one of the papers 9 that are in my material list. 10 Q. In fact, it's one of the six 11 studies that you have under your autism 12 category, right? 13 A. Yes, it's one of those. 14 Q. Okay. When did you last review 15 this? 16 A. A few weeks ago, I guess. 17 Q. Okay. And when you reviewed 18 this, did you see that as for autism -- when 19 is -- take a look at Table 3, because that's 20 what I'm going to ask you about. 21 MR. SNIDOW: What page? 22 MR. MURDICA: 1992. 23 QUESTIONS BY MR. MURDICA: 24 Q. All right. Doctor, do you 25 recall when you were assessing this study --</p>	<p style="text-align: right;">Page 453</p> <p>1 Q. Okay. Did you -- did you 2 analyze the exposure here as part of your 3 opinion? 4 A. Of course. Of course. Three 5 months ago. So you're not expecting me to 6 recall exactly what this papers says. 7 I -- part of the advantage of 8 the navigation guide is that you note down 9 all the details as you read it. So that's 10 how I did it. 11 Q. Okay. You know what CAST is, 12 right? 13 A. It's the Childhood Autism 14 Spectrum Test. 15 Q. So if you look at Table 3, 16 those are the outcome results for autism in 17 this study, correct? 18 A. These are the results for CAST, 19 I believe, correct? What is it, Table 3? 20 Q. They're for CAST -- 21 A. That is all for CAST and CPT, 22 that are both related to autism. 23 Q. CPT is an autism outcome as 24 well? 25 A. Let me see. No, the CAST is</p>

Page 454

1 about -- is about autism, yeah.

2 Q. Right.

3 And if you look, in reporting,

4 Avella-Garcia broke it down into -- by sex,

5 right?

6 A. Correct.

7 Q. Okay. And if you look at

8 females and the CAST score for sporadic use,

9 do you see the number? There were 287 --

10 A. Uh-huh.

11 Q. -- in that?

12 A. Yeah.

13 Q. Now, 287 is more than any of

14 your meconium studies in terms of a -- in

15 terms of a number that actually had the

16 outcome you were looking at, right?

17 A. So you're comparing pears with

18 apples. My meconium study had a measurement

19 of meconium. That gives more power because

20 there is less exposure assessment.

21 Here is just about whether

22 people had taken any pill, as you mentioned,

23 during pregnancy.

24 Q. Okay.

25 A. So if you want to compare this

Page 455

1 to something else, you might want to compare

2 it with studies done by Liew that are

3 50,000 -- 50,000 subjects.

4 This compare -- when you look

5 at studies that only rely on reports of

6 acetaminophen from mothers, this is a

7 relatively small study, correct? It's 2,600

8 compared to 50,000. So it stands to reason,

9 especially when you start to break them down

10 in subgroups, the results start to become

11 less stable.

12 Q. Okay.

13 A. And you can see things that you

14 wouldn't expect.

15 Q. So, for example, if we look at

16 females with sporadic use under the autism

17 measure, the CAST score, we see that for

18 those 287, acetaminophen use in two

19 trimesters was actually protective against

20 autism, right?

21 MR. SNIDOW: Object to the

22 form.

23 THE WITNESS: There is a

24 negative association here that is not

25 shown when all participants are seen

Page 456

1 together. And all participants is the

2 strongest -- is the strongest

3 association, is the strongest

4 analysis. It is where you have more

5 power. So if you start to break them

6 down by sex, there might be some

7 difference.

8 At the same time, the way I

9 evaluated this, this is not the only

10 paper that shows analysis certified

11 by gender, by sex, actually, in this

12 case.

13 And if you look at the entire

14 of the study, there is no evidence

15 altogether that there is an effect

16 modification by sex.

17 One study, again, is not enough

18 to create a concern that results might

19 be different in girls as opposed to

20 boys.

21 QUESTIONS BY MR. MURDICA:

22 Q. Avella-Garcia broke it down

23 into sex because they were worried about that

24 at the time that they did this analysis,

25 right?

Page 457

1 A. And I was worried as well.

2 Q. Okay.

3 A. So I reviewed the literature

4 exactly also with this in mind.

5 It's not hard to understand

6 that there are many studies that break them

7 down by sex, and there are plenty of studies.

8 This is one of the few that shows -- that

9 shows differences, but it doesn't mean that

10 this is true across the literature.

11 Q. And when --

12 A. So if you want to look at

13 entire literature, you will see very little

14 difference between boys and girls.

15 Q. Okay. And, Doctor, when you

16 look at all participants, when you don't

17 break it down by sex, for their CAST score,

18 none of the results were significant, right,

19 whether it be sporadic or persistent use?

20 A. CAST scores were increased in

21 ever-exposed males in this study, and so

22 they found an association in males and not in

23 females, and that is one study.

24 Q. But you just -- you just told

25 us not to look by sex, right?

<p style="text-align: right;">Page 458</p> <p>1 MR. SNIDOW: Objection to the</p> <p>2 form.</p> <p>3 QUESTIONS BY MR. MURDICA:</p> <p>4 Q. Doctor, my question was, in all</p> <p>5 participants, which you said is better, there</p> <p>6 was no statistically significant association</p> <p>7 for autism by CAST score --</p> <p>8 MR. SNIDOW: Objection.</p> <p>9 QUESTIONS BY MR. MURDICA:</p> <p>10 Q. -- for any amount of use of</p> <p>11 acetaminophen, correct?</p> <p>12 MR. SNIDOW: Objection to form.</p> <p>13 THE WITNESS: In this study,</p> <p>14 it's mostly males, not in females.</p> <p>15 When you look at all children, there</p> <p>16 is an 8 percent increased risk. And</p> <p>17 it's not statistically significant,</p> <p>18 but it's still 8 percent.</p> <p>19 So the interaction is</p> <p>20 consistent with the rest of the</p> <p>21 literature when you put everything</p> <p>22 together.</p> <p>23 QUESTIONS BY MR. MURDICA:</p> <p>24 Q. Yeah, my question, if you</p> <p>25 recall, was whether in all participants in</p>	<p style="text-align: right;">Page 460</p> <p>1 A. What is it again? What is it?</p> <p>2 Q. 1994, first sentence.</p> <p>3 A. Okay.</p> <p>4 Q. Did you see that they couldn't</p> <p>5 study the effective dose?</p> <p>6 A. I think that is something also</p> <p>7 generally I pointed out in my report without</p> <p>8 even reading Garcia, that recall of use of</p> <p>9 acetaminophen can be inaccurate, and that</p> <p>10 will make the results -- will wash away the</p> <p>11 results. It will make the results to</p> <p>12 disappear rather than show up, as they show</p> <p>13 up consistently throughout the entire</p> <p>14 literature here.</p> <p>15 Q. That's assume -- well, you're</p> <p>16 assuming that people have a mis-memory in one</p> <p>17 direction, right?</p> <p>18 A. No. I'm assuming that</p> <p>19 misclassification is nondifferential,</p> <p>20 especially because the studies are</p> <p>21 prospective and therefore are -- when the</p> <p>22 women were assessed, the children were not</p> <p>23 born yet, or they were just born. So they</p> <p>24 don't know whether the children will have</p> <p>25 ADHD, ASD or not.</p>
<p style="text-align: right;">Page 459</p> <p>1 Avella-Garcia, Exhibit 112, whether there was</p> <p>2 a statistically significant association with</p> <p>3 autism as an outcome.</p> <p>4 And the answer is no, correct?</p> <p>5 A. Correct. There is not a</p> <p>6 significant association when you put all of</p> <p>7 them together, but there is some suggestive</p> <p>8 association in males which is not shown in</p> <p>9 females.</p> <p>10 So, yeah, I -- overall, this</p> <p>11 paper doesn't provide a lot of evidence in</p> <p>12 support of the autism association --</p> <p>13 Q. Okay.</p> <p>14 A. -- though it was included in a</p> <p>15 meta-analysis. That is Alemany, that</p> <p>16 included also other five studies. And when</p> <p>17 you put all of them together, there is an</p> <p>18 association.</p> <p>19 Q. On page 1994, Doctor, what</p> <p>20 Avella-Garcia says in the first sentence is,</p> <p>21 "We were unable to evaluate the effects of</p> <p>22 dosage because of mothers' difficulties in</p> <p>23 recalling the dose taken."</p> <p>24 Did you see that when you were</p> <p>25 doing your analysis?</p>	<p style="text-align: right;">Page 461</p> <p>1 So there is no way they can</p> <p>2 predict the future. There is no way they can</p> <p>3 tell their dosage of acetaminophen based on</p> <p>4 what will happen three, four, five, ten years</p> <p>5 from now.</p> <p>6 So in all good faith, we</p> <p>7 believe that the -- that the</p> <p>8 misclassification is nondifferential.</p> <p>9 Q. And the women who get lost to</p> <p>10 follow-up in years three, four, five, seven,</p> <p>11 you know that there's a -- there's a bias</p> <p>12 there that women with healthy children have</p> <p>13 less of an interest in participating, right?</p> <p>14 A. I didn't write that. I mean,</p> <p>15 I'm not sure I can -- I can agree with that</p> <p>16 statement.</p> <p>17 There is lots of the -- of the</p> <p>18 study here used the clinical that counters</p> <p>19 the argument, which is called inverse</p> <p>20 probability weighting, which is exactly a</p> <p>21 technique to address the issue you say.</p> <p>22 You get the study, you get</p> <p>23 the -- you understand why women are lost to</p> <p>24 follow-up, and you can adjust for these</p> <p>25 variables and make sure that loss to</p>

<p style="text-align: right;">Page 462</p> <p>1 follow-up is not a problem.</p> <p>2 There are several studies that</p> <p>3 use inverse probability weights, and inverse</p> <p>4 probability weights is the technique to</p> <p>5 address your concern. This has been done</p> <p>6 multiple time in the literature, so I'm</p> <p>7 pretty confident there is not a problem.</p> <p>8 Q. The prospective aspect of the</p> <p>9 studies you're talking about, Doctor, is that</p> <p>10 the women are enrolled prior to -- prior to</p> <p>11 seeing the pregnancy outcome, correct?</p> <p>12 A. They are enrolled during</p> <p>13 pregnancy or at delivery.</p> <p>14 Q. Right.</p> <p>15 A. And we are talking about</p> <p>16 outcomes that happen when children are 3, 4,</p> <p>17 5, 2, 3, 4, 5, 10 year old --</p> <p>18 Q. Right.</p> <p>19 A. -- correct?</p> <p>20 Q. But the recall of what was used</p> <p>21 and when during pregnancy itself is</p> <p>22 retrospective, because they're being asked at</p> <p>23 some point in time what they did some prior</p> <p>24 point in time, right?</p> <p>25 A. They are typically asked during</p>	<p style="text-align: right;">Page 464</p> <p>1 bigger ones typically. They ask at 18 weeks,</p> <p>2 32 weeks and at pregnancy. So they're asking</p> <p>3 every trimester. And every trimester we now</p> <p>4 reporting their use at the time their</p> <p>5 pregnant, not after.</p> <p>6 So, again, this -- and I have</p> <p>7 to say, 43 of the 45 studies I reviewed I</p> <p>8 believe are prospective. So they used this</p> <p>9 design, which is incredibly rigorous.</p> <p>10 Q. Dr. Baccarelli, do you see one</p> <p>11 paragraph down, middle of the left column, it</p> <p>12 says, "Other limitations include unmeasured</p> <p>13 genetic confounding, as ADHD and ASC may have</p> <p>14 genetic components"?</p> <p>15 That's what the authors of the</p> <p>16 study said, right?</p> <p>17 A. And we -- that is what the</p> <p>18 authors of the study say. We already</p> <p>19 reviewed that this was really helpful to me</p> <p>20 because I had to take this as a valid</p> <p>21 concern. I did an analysis of the</p> <p>22 literature. It's in my report.</p> <p>23 Genetics is not a problem.</p> <p>24 There is no evidence whatsoever that genetics</p> <p>25 plays a role here.</p>
<p style="text-align: right;">Page 463</p> <p>1 pregnancy -- I mean, every use -- every</p> <p>2 record is retrospect. If asked you whether</p> <p>3 you took Tylenol today, like, it would be</p> <p>4 retrospective, correct?</p> <p>5 Q. Right.</p> <p>6 A. If you asked whether took --</p> <p>7 you took Tylenol yesterday or two months ago,</p> <p>8 it would be retrospective.</p> <p>9 I mean, the recall is of course</p> <p>10 a recall. Every memory is in our brain is</p> <p>11 about things we have done unless you are</p> <p>12 arguing we can predict the future when we</p> <p>13 ask -- if you ask me whether we'll take</p> <p>14 Tylenol or acetaminophen the next year, I</p> <p>15 might say yes, but that's about the future.</p> <p>16 I don't think you can argue</p> <p>17 that these people should have asked women</p> <p>18 about their future use, correct? Any use you</p> <p>19 have is about what happened in the past few</p> <p>20 months.</p> <p>21 And these studies are</p> <p>22 incredible because most of the -- most of</p> <p>23 the -- most of the recall is about recent</p> <p>24 exposure, recent use. Some of the studies</p> <p>25 asked multiple times during pregnancy, the</p>	<p style="text-align: right;">Page 465</p> <p>1 Q. Okay. And if you look on the</p> <p>2 last page, there's a commentary. If you flip</p> <p>3 it over to the very last page. Let me see.</p> <p>4 You see a commentary there?</p> <p>5 A. Yeah.</p> <p>6 Q. And this is by your friend</p> <p>7 Dr. Liew, right?</p> <p>8 A. It is not a friend. It's a</p> <p>9 colleague, please.</p> <p>10 Q. Okay. This is by your</p> <p>11 colleague --</p> <p>12 A. Don't make me too friendly with</p> <p>13 my colleagues. I don't get -- I never get a</p> <p>14 drink with Dr. Liew.</p> <p>15 Q. Okay.</p> <p>16 A. And also didn't hire him in my</p> <p>17 department, so he really might be upset for</p> <p>18 me not hiring him.</p> <p>19 Q. Dr. Baccarelli, you see that</p> <p>20 Dr. Liew -- the commentary is with respect to</p> <p>21 this Avella-Garcia article, right?</p> <p>22 A. I think so.</p> <p>23 Q. And what Dr. Liew says is the</p> <p>24 main concern in Avella-Garcia's study perhaps</p> <p>25 is not confounding by indication but</p>

<p style="text-align: right;">Page 466</p> <p>1 confounding by genetic factors. And then he 2 goes on to explain why he thinks that could 3 be a problem. 4 And I take it you just 5 disagree, correct? 6 MR. SNIDOW: Object -- sorry, 7 objection to the form. 8 THE WITNESS: I think we -- 9 there is a change that you showed 10 before that clarifies what Dr. Liew's 11 opinion is, and I think he said that 12 he is not worried anymore about 13 genetics because he reviewed the 14 literature. And he agreed with me 15 that genetics is not at play here. 16 And again, there is no data 17 whatsoever. You can claim genetics 18 all the way, and perhaps it's easy to 19 say because, you know, genes sound 20 very important. But genes are just 21 one of the confounders that needed to 22 be addressed. It has been addressed. 23 MR. MURDICA: Okay. 24 MR. SNIDOW: Jim, is this cut 25 off, this commentary?</p>	<p style="text-align: right;">Page 468</p> <p>1 A. I'm sure it is. He perhaps 2 published -- published a lot of papers. 3 Q. You now have in front of you 4 what's been marked 113 -- Exhibit 113. 5 That is Liew in 2016, right? 6 A. Yes. 7 Q. This is one of your six autism 8 papers you evaluated, correct? 9 A. Yes. 10 Q. Okay. And so this was about 11 the same time that Liew had his commentary on 12 Avella-Garcia saying that he thought then, at 13 least, that genetic was an issue, right? 14 A. Correct. And I want to point 15 out, though, this is before we -- either he 16 or Oscar read the Stergiakouli or Leppart, 17 which are the papers that really show that 18 genetics is not a problem. 19 So in 2016, it might have been 20 more of a problem because there were not a 21 lot of data about whether women who have 22 genes, so they may pose them and their 23 children at risk of ASD or ADHD, had higher 24 intake of Tylenol. 25 Now, we have a paper, Leppart,</p>
<p style="text-align: right;">Page 467</p> <p>1 THE WITNESS: Yeah, I think 2 it's not complete. 3 MR. MURDICA: Okay. We can -- 4 THE WITNESS: It's not 5 complete, but -- 6 MR. MURDICA: We'll get to 7 that. 8 THE WITNESS: No, it's in -- 9 yeah, it's cut off. 10 QUESTIONS BY MR. MURDICA: 11 Q. Okay. Do you -- 12 MR. SNIDOW: Okay. 13 QUESTIONS BY MR. MURDICA: 14 Q. Dr. Liew also, around the same 15 time as this commentary, had a paper that 16 evaluated autism with acetaminophen as well, 17 right? 18 A. It's possible. If you can tell 19 me which one. 20 (Baccarelli Exhibit 113 marked 21 for identification.) 22 QUESTIONS BY MR. MURDICA: 23 Q. Okay. I'll just mark it. 24 You do recall one of your six 25 autism studies was Liew 2016, right?</p>	<p style="text-align: right;">Page 469</p> <p>1 that show no higher intake of Tylenol or 2 acetaminophen during pregnancy in women 3 who have this higher risk for ASD. 4 So, I mean, in order for 5 something to be a problem, it needs to be 6 associated with Tylenol, and Tylenol is not 7 associated with the genetic risk score for 8 ASD. So there is no way that genes had 9 nothing to do -- anything to do with ASD. 10 Q. You saw that Dr. Liew is still 11 looking at the polygenic risk scores in this 12 exact cohort that's in Exhibit 113, right? 13 MR. SNIDOW: Object to the 14 form. 15 QUESTIONS BY MR. MURDICA: 16 Q. That's what he told you. 17 MR. SNIDOW: Object to form. 18 QUESTIONS BY MR. MURDICA: 19 Q. Right, Doctor? 20 A. If you want to ask him, I -- 21 Q. Okay. 22 A. -- you are welcome to contact 23 him. I mean, as far as I'm concerned, 24 he's -- he seemed pretty confident that it's 25 not a problem.</p>

Page 470

1 I understand he's a very
 2 thorough individual, and he might want to
 3 follow up and do work -- all the research --
 4 Q. Doctor, that's your -- your
 5 only communication was that e-mail, so that's
 6 your interpretation of his e-mail, correct?
 7 MR. SNIDOW: Objection to the
 8 form.
 9 THE WITNESS: My interpretation
 10 of that e-mail, corroborated by my
 11 evidence. And I'm using his e-mail,
 12 but I'm particularly using --
 13 QUESTIONS BY MR. MURDICA:
 14 Q. Okay.
 15 A. You know, science is not based
 16 in authority. I have all the respect for
 17 Dr. Liew that is in the world. I think he
 18 does good science. But I am basing my
 19 opinion on the data that I publish, not on
 20 the authority of Dr. Liew.
 21 Q. Okay.
 22 A. And data and the science is
 23 that there is no -- women at higher genetic
 24 risk for autism, and for their children can
 25 be a higher genetic risk for autism, takes no

Page 471

1 more Tylenol than all the other women.
 2 So there is no one in the world
 3 that based on the evidence that can tell that
 4 genes are a problem, especially for ASD.
 5 Q. I appreciate that's your view,
 6 Dr. Baccarelli. I have another question for
 7 you, if you turn to page 955 on Exhibit 113.
 8 A. Uh-huh.
 9 Q. If you look at Table 2, you see
 10 it's broken down into autism spectrum
 11 disorders and infantile autism, right?
 12 A. Uh-huh.
 13 Q. And he measures the number of
 14 cases but also includes person years. And
 15 that's by age, right?
 16 A. Sorry, what did you say?
 17 Q. Do you see the measure is by
 18 number of cases and person years?
 19 A. And what do you say about
 20 person years?
 21 Q. I'm saying that's by age,
 22 right? That's adding up the ages?
 23 A. No, it's the years of
 24 follow-up.
 25 Q. The years of follow-up?

Page 472

1 A. Right.
 2 Q. Of the child, right?
 3 A. Which probably might be similar
 4 to the age.
 5 Q. Yeah. Okay.
 6 And you see for-ever used
 7 acetaminophen during pregnancy, there's a
 8 positive point estimate and a slightly
 9 significant confidence interval, right? For
 10 ever used?
 11 MR. SNIDOW: Objection to the
 12 form.
 13 But, actually, where are you
 14 looking?
 15 MR. MURDICA: Can you let the
 16 doctor answer? Because I'm running of
 17 out of time.
 18 MR. SNIDOW: I see it now. I'm
 19 sorry.
 20 Go ahead.
 21 THE WITNESS: Sorry. You are
 22 looking at the line where it says the
 23 1.22 includes odds ratio 1.19 --
 24 QUESTIONS BY MR. MURDICA:
 25 Q. Yes, correct.

Page 473

1 A. -- adjusted odds ratio?
 2 Q. Yeah, that's --
 3 A. Yeah.
 4 Q. You see that?
 5 A. So there is a 19 percent
 6 increased risk in ever used, which is very
 7 similar to the 16 percent you'll see on the
 8 right-hand column.
 9 Q. And then if you look, Doctor --
 10 well, the 16 percent on the right-hand column
 11 is not statistically significant, right?
 12 A. Again, I'm not looking at each
 13 of the study individually for statistical
 14 significance. Using overall. And you can
 15 understand clearly why it might not be
 16 statistically significant, because the power
 17 in a study like this is determined by the
 18 number of cases.
 19 So the analysis on the right is
 20 a subset, and this 286 number of cases as
 21 opposed to 626. So the analysis on the left
 22 is three times -- has three times as much
 23 power as the analysis on the right, and
 24 they're essentially the same.
 25 Any epidemiologist who has

Page 474

1 trained in epidemiology will tell you that
 2 the two column, 1.22 and 1.16, have
 3 essentially -- sorry. 1.19 and 1.16 have
 4 essentially the same results.
 5 Q. Okay.
 6 A. There is no noticeable
 7 difference between the two, unless you really
 8 want to say that we need to -- in one study
 9 we need to worry about epi value.
 10 Q. The lack of statistical
 11 significance on the right doesn't matter to
 12 you when you have the number on the left.
 13 Right, Doctor?
 14 MR. SNIDOW: Objection.
 15 Objection to the form.
 16 THE WITNESS: What I -- what I
 17 said is that the -- is that the two
 18 risk estimates are very similar, and
 19 you can see also that the confidence
 20 interval are pretty similar. The
 21 confidence interval on the right
 22 include the confidence interval on the
 23 left.
 24 So as far as I'm concerned,
 25 these are two estimates of hazard

Page 475

1 ratio that are very similar.
 2 QUESTIONS BY MR. MURDICA:
 3 Q. Okay. And if you look down on
 4 the left side and you look at the different
 5 trimester analysis, you see that it's not
 6 significant -- it's not statistically
 7 significant for autism for exposure in the
 8 first trimester only, the second trimester
 9 only, the third trimester only, the second
 10 and third trimester together, the first and
 11 third trimester together.
 12 Right?
 13 A. I'm very confused about all
 14 these trimesters you mentioned.
 15 Q. Okay.
 16 A. What are you -- what do you
 17 want me to focus on?
 18 Q. Table 2.
 19 Did you do an analysis of all
 20 the different outcomes here?
 21 MR. SNIDOW: Objection to the
 22 form.
 23 THE WITNESS: I reviewed this
 24 very carefully, and of course, I mean,
 25 my question was -- the question I

Page 476

1 assessed is stated in my -- in my
 2 report.
 3 I wanted to answer this
 4 question. Does acetaminophen during
 5 pregnancy -- is acetaminophen during
 6 pregnancy causally associated with
 7 ADHD, ASD and neurodevelopmental
 8 disorders.
 9 So I looked at the process as a
 10 whole, and I made sure there was no
 11 heterogeneity that made me worry about
 12 one window being more important than
 13 another. And I think this paper shows
 14 that.
 15 But if you disagree, let me
 16 know where this paper shows --
 17 MR. MURDICA: Well, I asked you
 18 a question, and I haven't gotten an
 19 answer to it.
 20 MR. SNIDOW: Hold on. I think
 21 we're out of time.
 22 Can we do a time check?
 23 VIDEOGRAPHER: We're at seven
 24 hours, one minute.
 25 MR. MURDICA: He didn't answer

Page 477

1 my question, though.
 2 MR. SNIDOW: Well --
 3 MR. MURDICA: Okay. That's
 4 fine.
 5 MR. SNIDOW: -- he did answer
 6 your question.
 7 MR. MURDICA: He didn't. He
 8 said, I don't know what -- where
 9 you're talking about, and I --
 10 MR. SNIDOW: Do you want one
 11 more question? I'll give you one
 12 more.
 13 MR. MURDICA: I'm not asking
 14 for your charity. If you want to
 15 stand on him not answering that
 16 question, that's fine. I asked a
 17 question. I didn't get an answer.
 18 MR. SNIDOW: Let me look at it.
 19 You said table -- did you do an
 20 analysis of all the different outcomes
 21 here? That one?
 22 MR. MURDICA: Well --
 23 MR. SNIDOW: Yeah. All right.
 24 I'm going to stand on that.
 25 MR. MURDICA: It was before,

Page 478

1 when he said he didn't understand what
 2 I was asking about the table.
 3 THE WITNESS: My eyes are
 4 crossing here. I can't see anything.
 5 Okay.
 6 MR. SNIDOW: No. I'm fine with
 7 that. You're out of time. You're a
 8 minute over.
 9 VIDEOGRAPHER: Want to go off
 10 the record?
 11 The time right now is
 12 5:48 p.m., and we are off the record.
 13 (Off the record at 5:48 p.m.)
 14 VIDEOGRAPHER: The time right
 15 now is 6 p.m. We are back on the
 16 record.
 17 CROSS-EXAMINATION
 18 QUESTIONS BY MR. SNIDOW:
 19 Q. Dr. Baccarelli, when
 20 Mr. Murdica was asking you questions, he
 21 asked you a lot of questions about sample
 22 size.
 23 Do you remember that?
 24 A. Correct.
 25 Q. And one of the things you were

Page 479

1 talking about is the difference between the
 2 likelihood of a false negative in a study and
 3 a false positive.
 4 Do you remember that?
 5 A. Correct.
 6 Q. So let's say I had a study that
 7 had six people in it or something.
 8 Is that a pretty well-powered
 9 study?
 10 A. No, that would be low power.
 11 Q. And is a study that has low
 12 power, is that likely to lead to a false
 13 negative or a false positive?
 14 A. A false negative.
 15 Q. If you had a study with six
 16 people or just an unpower -- an underpowered
 17 study generally and you got a null result,
 18 would that be surprising?
 19 A. That would be completely
 20 expected, even if the association were
 21 absolutely true.
 22 Q. And why is that?
 23 A. Because the study is
 24 underpowered; therefore, it cannot show an
 25 association when it exists.

Page 480

1 Q. If a small study, on the other
 2 hand, shows a statistically significant
 3 result, is that a surprising result?
 4 MR. MURDICA: Objection to
 5 form.
 6 THE WITNESS: Not as much,
 7 because if an association shows up but
 8 the study has very little power to
 9 show an association -- but if an
 10 association shows up, that is likely
 11 to be a true positive. Particularly
 12 if there are larger studies like in
 13 this case of thousands or tens of
 14 thousands of people, they show the
 15 same thing.
 16 So there is not surprise. It's
 17 more studies and large studies all
 18 show associations. So everything is
 19 pretty consistent.
 20 QUESTIONS BY MR. SNIDOW:
 21 Q. Mr. Murdica asked you about
 22 some small studies that showed results that
 23 were not statistically significant.
 24 A. Uh-huh.
 25 Q. Does that provide a lot of

Page 481

1 information about whether there's a real link
 2 between APAP exposure and ADHD and autism?
 3 MR. MURDICA: Objection to
 4 form.
 5 THE WITNESS: No, because as
 6 I -- I did also grading of evidence
 7 for these. Sample size was part of
 8 it.
 9 If a small study doesn't
 10 provide evidence, that's suspected.
 11 It's a small study, very low power.
 12 The study doesn't have the power to
 13 show the association if there is one.
 14 QUESTIONS BY MR. SNIDOW:
 15 Q. Mr. Murdica asked you about
 16 some studies that had small sample sizes but
 17 nevertheless showed statistically significant
 18 results.
 19 Do those studies hurt
 20 Mr. Murdica's position or help him?
 21 MR. MURDICA: Objection to
 22 form.
 23 THE WITNESS: They hurt him a
 24 lot because the really -- even with
 25 small power, the result comes out, so

<p style="text-align: right;">Page 482</p> <p>1 it means the results is strong.</p> <p>2 QUESTIONS BY MR. SNIDOW:</p> <p>3 Q. So when you were considering</p> <p>4 the results between small studies that were</p> <p>5 null, small studies that were statistically</p> <p>6 significant, did you place greater weight on</p> <p>7 some or the other?</p> <p>8 A. Of course. I placed better</p> <p>9 weight on the ones that are bigger because</p> <p>10 there is more power. And I documented that</p> <p>11 in the navigation guide as well as my -- in</p> <p>12 my writing.</p> <p>13 Q. And did you consider all the</p> <p>14 results of those studies, big or small,</p> <p>15 statistically significant or not, in your</p> <p>16 analysis?</p> <p>17 MR. MURDICA: Objection. Form.</p> <p>18 THE WITNESS: Oh, absolutely.</p> <p>19 I considered all the results, the ones</p> <p>20 that are positive and the ones that</p> <p>21 are negative. And that to say --</p> <p>22 there are very few that are negative.</p> <p>23 They happen to be small, and this is</p> <p>24 expected. 95 percent of the studies</p> <p>25 are -- show a signal. So they are</p>	<p style="text-align: right;">Page 484</p> <p>1 what became Baker 2020.</p> <p>2 Do you remember that question?</p> <p>3 A. I think I do.</p> <p>4 Q. Okay.</p> <p>5 A. So there was the analysis plan.</p> <p>6 Q. Yeah.</p> <p>7 And originally there -- the</p> <p>8 sample size of the outcome with the exposure</p> <p>9 was only 13, if you remember. And then by</p> <p>10 the time of publication, it was 33, right?</p> <p>11 A. I think you are only referring</p> <p>12 to a subset of the study. The study overall</p> <p>13 had, as we reviewed, 385 people when the --</p> <p>14 when the -- when it was published.</p> <p>15 Then in the e-mail you show me,</p> <p>16 or in the proposal you show me, it was</p> <p>17 smaller, with like 200 and some.</p> <p>18 So the entire study is not what</p> <p>19 you said. In test -- in this study, all the</p> <p>20 units provide power, correct? So the power</p> <p>21 is calculated on 385.</p> <p>22 Q. The outcome on the sample size</p> <p>23 on the pilot that Dr. Baker did in 2018 had a</p> <p>24 relative risk of somewhere around 8 and a</p> <p>25 half.</p>
<p style="text-align: right;">Page 483</p> <p>1 really -- they are really there.</p> <p>2 MR. SNIDOW: Thank you,</p> <p>3 Dr. Baccarelli. I have nothing</p> <p>4 further.</p> <p>5 REDIRECT EXAMINATION</p> <p>6 QUESTIONS BY MR. MURDICA:</p> <p>7 Q. Dr. Baccarelli, earlier today</p> <p>8 we looked at a proposal that Dr. Baker made</p> <p>9 to you to conduct what became Baker 2020.</p> <p>10 Do you remember that?</p> <p>11 MR. SNIDOW: Sorry. Objection.</p> <p>12 Can we go off the record for a</p> <p>13 moment, actually? Can we go off the</p> <p>14 record?</p> <p>15 VIDEOGRAPHER: The time right</p> <p>16 now is 6:04 p.m. We are off the</p> <p>17 record.</p> <p>18 (Off the record at 6:04 p.m.)</p> <p>19 VIDEOGRAPHER: The time right</p> <p>20 now is 6:04 p.m. We're back on the</p> <p>21 record.</p> <p>22 QUESTIONS BY MR. MURDICA:</p> <p>23 Q. Dr. Baccarelli, I was asking</p> <p>24 you before I was interrupted about</p> <p>25 Dr. Baker's original proposal in 2018 for</p>	<p style="text-align: right;">Page 485</p> <p>1 Do you remember that?</p> <p>2 A. Right. I remember that,</p> <p>3 absolutely.</p> <p>4 Q. And when it went to</p> <p>5 publication, when the extra 20 cases were</p> <p>6 found, it ended up being something much lower</p> <p>7 than that, right?</p> <p>8 A. The cases were not found. We</p> <p>9 completed the data set, and we -- obviously</p> <p>10 we didn't publish the results based on nine</p> <p>11 because we wanted the study to be as complete</p> <p>12 as possible.</p> <p>13 Again, the two results are</p> <p>14 comparable. There's the one subset, and</p> <p>15 whether it's 9 or 2.5, they're in the same</p> <p>16 direction and give the same signal.</p> <p>17 Q. In that case, though, making</p> <p>18 the sample larger made the effect decrease,</p> <p>19 right?</p> <p>20 A. The results are pretty similar.</p> <p>21 As you understand -- as you understand, a</p> <p>22 sample size that's smaller can give bias in</p> <p>23 both directions. It can be smaller or</p> <p>24 bigger. The results don't decrease because</p> <p>25 you increase the sample size. This is just</p>

Page 486

1 poor statistics.

2 Q. You're testifying that 9 and

3 2.5 are similar?

4 A. I'm testifying that in this

5 case, there was a smaller odds ratio when it

6 became -- when we went to publication with a

7 larger sample size.

8 But your assertion that a

9 larger sample size decreases the odds ratio

10 of the risk, it's completely wrong. The risk

11 is whatever it is. A larger sample size may

12 suggest a -- find it better.

13 Q. Adding more cases to Baker 2020

14 decreased the effect, correct?

15 A. We didn't add more cases. We

16 added more subjects. There were more cases.

17 There were more controls. There were more

18 people exposed, less people -- more people

19 nonexposed. Altogether, the results -- the

20 results became more robust.

21 And if you had the confidence

22 interval, so the 8.5 or 9, whatever it was,

23 and you compared to the confidence interval

24 at 2.5 that we published, probably this

25 confidence interval would be overlapping.

Page 487

1 Unfortunately, we didn't have

2 the confidence interval, so I cannot really

3 tell you what they would have been.

4 Q. Yeah.

5 A. Clearly you can understand that

6 there was a preliminary analysis. It

7 happened to be that way. It could have been

8 the other way around. It could have become

9 20. I wouldn't have been surprised.

10 Q. You have -- we only have the

11 point estimate, which went down when you had

12 more information, correct?

13 A. That is not typically happens.

14 It can go either way.

15 MR. MURDICA: Yeah. That was

16 my point.

17 Okay. No further questions.

18 MR. SNIDOW: Off the record?

19 VIDEOGRAPHER: The time right

20 now is 6:08 p.m. We are off the

21 record.

22 (Deposition concluded at 6:08 p.m.)

23 (Baccarelli Exhibits 114 and

24 115 marked for identification.)

25 -----

Page 488

1 CERTIFICATE

2 I, CARRIE A. CAMPBELL, Registered

3 Diplomate Reporter, Certified Realtime

4 Reporter and Certified Shorthand Reporter, do

5 hereby certify that prior to the commencement

6 of the examination, Andrea Baccarelli, MD,

7 Ph.D., was duly sworn by me to testify to the

8 truth, the whole truth and nothing but the

9 truth.

10 I DO FURTHER CERTIFY that the

11 foregoing is a verbatim transcript of the

12 testimony as taken stenographically by and

13 before me at the time, place and on the date

14 hereinbefore set forth, to the best of my

15 ability.

16 I DO FURTHER CERTIFY that I am

17 neither a relative nor employee nor attorney

18 nor counsel of any of the parties to this

19 action, and that I am neither a relative nor

20 employee of such attorney or counsel, and

21 that I am not financially interested in the

22 action.

23

24

25

CARRIE A. CAMPBELL,
 NCRA Registered Diplomate Reporter
 Certified Realtime Reporter
 California Certified Shorthand
 Reporter #13921
 Missouri Certified Court Reporter #859
 Illinois Certified Shorthand Reporter
 #084-004229
 Texas Certified Shorthand Reporter #9328
 Kansas Certified Court Reporter #1715
 New Jersey Certified Court Reporter
 #30X100242600
 Louisiana Certified Court Reporter
 #2021012
 Notary Public
 Dated: August 15, 2023

Page 489

1 INSTRUCTIONS TO WITNESS

2

3 Please read your deposition over

4 carefully and make any necessary corrections.

5 You should state the reason in the

6 appropriate space on the errata sheet for any

7 corrections that are made.

8 After doing so, please sign the

9 errata sheet and date it. You are signing

10 same subject to the changes you have noted on

11 the errata sheet, which will be attached to

12 your deposition.

13 It is imperative that you return

14 the original errata sheet to the deposing

15 attorney within thirty (30) days of receipt

16 of the deposition transcript by you. If you

17 fail to do so, the deposition transcript may

18 be deemed to be accurate and may be used in

19 court.

20

21

22

23

24

25

Page 490

1 ACKNOWLEDGMENT OF DEPONENT

2

3

4 I, _____, do

5 hereby certify that I have read the foregoing

6 pages and that the same is a correct

7 transcription of the answers given by me to

8 the questions therein propounded, except for

9 the corrections or changes in form or

10 substance, if any, noted in the attached

11 Errata Sheet.

12

13 _____ DATE _____

14

15 Subscribed and sworn to before me this

16 _____ day of _____, 20 _____.

17 My commission expires: _____

18

19 Notary Public

20

21

22

23

24

25

Page 492

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

Page 491

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

<u>WORD</u> <u>INDEX</u>				
< \$ >	10 41:18, 24	104 11:5	115 12:13,	205:6
\$100,000	42:12 43:4,	384:8, 12	16 359:8	390:15, 19
138:21	16, 20 344:1,	105 11:10	487:24	140 55:14
\$150,000	15 349:1, 4	393:22	11758 2:24	255:10
55:3, 14	357:23	394:1	118 28:25	141 263:20,
\$500 109:24	364:18	106 11:13	29:9, 20	22 264:21
	377:4	393:23	1185 7:2	142 260:22
	385:9	394:3, 7	1190 388:14	264:1
	462:17	107 11:17	1191 384:24,	267:22
	10,000	405:19, 24	25 385:10	268:9, 10
< 0 >	102:24	108 9:11	1198 388:13,	143 271:22
0.002 216:2,	10:01	11:19	24	14578 414:1
20	107:23, 25	420:19, 24,	12 11:12	146 368:16,
0.05 213:15,	10:17 108:2	25	41:19	18, 20 369:1
20 216:21	100 10:17	109 11:22	42:12	15 217:11
00966 3:7	16:23	428:5, 11	205:6	316:12
05 216:18	150:23	11 41:24	339:14	347:20
07960 6:3	210:17	43:20	344:15	445:17
084-004229	239:21	378:11	349:1, 4	488:24
488:20	348:4, 8	379:16, 24	353:21, 23,	150 2:10
	350:15	434:13	24 379:15	154 369:13
< 1 >	351:4, 10	11:29	381:2	16 99:20
1 5:2	352:18	190:20, 22	12:30 228:2	364:2
179:24	365:5	11:52	12:31	473:7, 10
191:21	392:15	190:24	229:13, 15	166 368:23
213:11	430:5	110 12:1	120 218:14	369:8
449:13	10017 3:13	438:9, 15, 16	219:5 433:2	169 9:13
1,000	6:8	442:15	1200 5:21	17.2 364:7
103:15	10019 6:21	443:2	6:14	1700 7:8
172:10	10019-9601	111 12:4	126 1:13	1715 488:21
1,000-	7:15	448:8, 12, 14	2:23 13:8	1717 3:24
milligram	10036 7:3	451:2	12th 5:21	172 378:7
201:18	101 10:21	112 12:6	6:8, 14	381:2
1.16 474:2, 3	354:12, 19	450:21	13 27:4	174 9:16
1.19 472:23	365:9	451:3, 5, 6	50:16	175 371:13
474:3	371:17	459:1	298:5, 11, 13,	179 368:24
1.22 472:23	385:5 386:6	113 12:7	17 484:9	369:8
474:2	102 11:1	467:20	13202 8:3	17th 7:19
1:08 229:17	367:23	468:4	138 272:4	18 53:3
1:22-md-	368:3, 5	469:12	13921	99:2, 20
03043 1:6	103 11:2	471:7	488:18	100:15, 22
1:22-md-	374:16, 20	114 12:10	14 1:6 9:5	435:15, 17,
03043-DLC	380:17	487:23	13:5 27:13	21 464:1
1:4	383:2			

18th 150:14, 20	20 40:5 58:5 70:11, 12 149:25 150:4 154:19 162:21 177:5 234:20 239:22 252:10 306:19 380:16 383:10 439:17 485:5 487:9 490:16	411:8 467:25 468:5, 19 2017 70:7, 12 193:18 291:7, 9, 10 2018 17:25 18:1, 6 19:21 40:6, 8 41:11 70:13 152:5, 10 175:9 270:1 291:8, 10, 11 483:25 484:23	2020 40:12, 13, 17, 19, 21, 23 45:4, 18, 20 47:14 48:7 53:14 57:14 69:6 121:23 122:17, 24 123:8 124:6, 8 127:22 128:7 151:5, 12 158:17 194:12, 21 210:9 249:7 254:16, 19 256:21 269:24 282:21 286:6 337:14 339:21 340:4 347:25 348:9 349:21 351:11 352:17 361:8 365:5 366:7 379:9 382:2 384:12 483:9 484:1 486:13	2021012 488:23 2022 40:16, 19, 20 57:24 58:6 118:8 120:14 121:24 127:10 293:13, 14 294:2 331:2 420:10 421:9 423:5 424:1, 3, 7, 11 426:5 435:15, 16, 17, 22 2023 1:6 13:6 47:12 50:17 52:11 53:3, 21 57:16 70:7 86:12 114:20 115:8, 12 119:4, 22 150:20 228:18 293:11 330:22 373:22 426:22 428:8, 14, 17 435:6 488:24 2024 60:22 2029 5:16 269:24 20-day 94:11 20-plus 377:4
1901 2:16 191 369:13 385:9 19103 7:20 1965 132:25 199 357:6, 11, 12 369:7 1992 451:22 1994 459:19 460:2	200 5:8 55:2 249:23 320:18 341:8 345:20, 21, 23 392:16 484:17 20004-1275 5:22 6:15 20006 7:8 200-2900 4:5 2003 148:24 201 4:16 2013 291:6 324:23 2014 17:7 291:7, 8 305:10 324:18 2015 291:7 2016 53:13, 14 70:8 291:6, 7, 9 406:21 409:13, 21	2019 11:12 17:23 28:8 39:12 69:8 70:5 130:6 149:6 151:22 152:5, 10 169:8, 18 170:10 173:23 252:11 253:22 254:23 266:2 270:16 280:1 281:1 283:3 291:11, 12, 13 292:8 322:11 361:3 406:21 411:7 202 5:22 6:15 7:9	254:16, 19 256:21 269:24 282:21 286:6 337:14 339:21 340:4 347:25 348:9 349:21 351:11 352:17 361:8 365:5 366:7 379:9 382:2 384:12 483:9 484:1 486:13	254:16, 19 256:21 269:24 282:21 286:6 337:14 339:21 340:4 347:25 348:9 349:21 351:11 352:17 361:8 365:5 366:7 379:9 382:2 384:12 483:9 484:1 486:13
2 9:3 95:17 97:5 157:2, 4 179:18, 22 191:17 194:4 364:15 368:10, 11 369:15 449:14 462:17 471:9 475:18 2,000 213:3 2,600 455:7 2.15 216:13 2.30 216:13 2.5 218:10 485:15 486:3, 24 2.51 221:20, 21, 25 2:07 292:20, 22 2:20 292:24				

21 17:8 175:8 210 3:7 21052 8:7 211 4:9 212 2:24 6:22 7:3, 15 213 8:13 9:18 215 7:20 218 4:22 22 127:20 293:11 222 378:6 381:2 23 371:16 233 219:4 221:22 238 218:13 219:23 220:4, 10 24 203:17 204:11, 17, 25 207:3 352:11, 12, 22 353:13 240 110:13 241 111:18 241-8111 4:10 245 9:19 25 150:3 308:2, 3 363:23 364:20 365:5, 25 366:8, 19 367:16 379:24, 25 250 6:21 7:14 8:2 251 222:14 2625 4:9	28 94:11, 13, 20 398:21 399:5 439:5, 8, 13, 19, 20, 21, 23 440:2 283 9:23 222:1 284-3880 5:17 286 473:20 287 454:9, 13 455:18 289 10:1 289-1313 5:22 6:15 29 201:1 293 10:4 296 10:4 297 10:7 299 250:13 29th 419:17 2nd 406:9, 12 < 3 > 3 193:25 194:10 195:16 286:6 369:15 448:15 451:19 453:15, 19 462:16, 17 3.6 376:14 3.83 218:11 221:20 222:1, 2, 17 3:04 343:1 3:07 347:4, 6 3:16 347:8	3:56 390:1, 3 30 7:19 75:18 103:15 118:19 133:17 184:24 185:14 186:7 376:20 380:13 489:15 300 3:18 4:4 5:16 18:11 61:24 75:17 90:25 218:13 301 247:10 3043 1:3 305 3:24 30XI0024260 0 488:22 310 4:17 5:17 312 2:11 314 4:10 315 8:3 32 99:3 100:15 464:2 33 357:18, 19, 22, 24 358:11 363:25 380:1 484:10 34 366:13 432:23 34108 5:8 345 357:25 364:25	365:12, 19 366:12, 25 380:1 347 10:11 348 10:17 35 3:24 254:11 354 10:21 355 357:10 360 376:15 36104 4:22 362 448:15 367 11:1 374 11:2 384 11:5 385 484:13, 21 390 6:8 393 11:10, 13 394 337:25 338:3 339:17 340:15 341:8, 20 345:13 396 44:20 3's 194:4 < 4 > 4 43:24, 25 196:11 300:22, 23 357:8, 9 462:16, 17 4:15 390:5 40 75:18 88:20 89:22 376:20 443:17 400 75:17 338:16	344:12, 13 401 5:2 405 11:17 40-minute 110:5 410 3:6 4100 2:10 420 11:19 421-2800 2:24 425 3:13 428 11:22 429 179:18, 20 191:11, 15 43 464:7 433 27:1 438 12:1 44 443:18 440 2:16 447-0500 3:7 448 12:4 45 254:10 348:20 380:8 464:7 450 12:6 467 12:7 468-8000 7:15 4717 4:4 4740 3:18 474-2911 8:3 478 9:6 483 9:7 487 12:10, 13 495-2333 2:17 < 5 >
---	--	---	---	--

5 43:2 359:12 462:17 5.5 364:4 5:04 444:21, 23 5:19 444:25 5:48 478:12, 13 50 133:8 221:13 222:3, 13 340:19 348:20 376:20 403:20 430:2 50,000 29:5 262:23 455:3, 8 500 6:2 50th 362:19 512 3:25 520-6639 5:3 5-3 391:9 542-8000 8:13 55 160:23 196:15, 23 197:24 198:8 200:7 201:22 202:5 221:7 340:23, 25 341:7, 19 344:6 345:13 363:11 555 5:21 6:14 8:12	556-2100 7:3 55th 6:21 7:14 8:12 56th 1:13 2:23 13:8 59.9 201:8 < 6 > 6 41:17, 23 43:3, 9 44:13 421:8, 12 478:15 6:04 483:16, 18, 20 6:08 487:20, 22 6:20 282:3, 11 285:9, 12 287:8 290:8 6:30 282:4 60 221:7 393:11 60,000 29:5 600 4:16 8:2 60:12 110:24 111:5, 7 172:9 311:15 312:5 314:11 600-plus 311:2 60606 2:11 626 473:21 63 391:8 6-3 391:10, 11 63102 4:10 64112 3:19 4:4	646 3:14 6:9 650 336:24 656-7066 4:17 67 6:2 671-7277 3:25 6th 2:23 < 7 > 7 40:8 41:17 43:9 129:25 131:10 371:16 70 47:14 173:23 700 54:15 701-1100 3:19 713 2:17 737-0500 7:9 741-5220 2:11 746-2000 6:9 76 385:4 77002 2:16 775-6101 6:3 78664 3:24 7-Eleven 6:23 < 8 > 8 17:8 41:17 44:13 234:19 364:1 443:9, 11	458:16, 18 484:24 8,000 115:22 8.5 364:6 379:2 381:12, 16 486:22 8:32 1:14 13:6 8:43 26:8, 10 8:47 26:12 80 47:15 800 4:23 5:9 816 3:19 4:5 818 8:8 836-8000 6:22 837-5151 3:14 859 488:19 872-3500 5:9 877.370.DEP S 1:23 88 108:17 89 9:11 108:9, 16 109:6 144:13, 14 898-2034 4:23 < 9 > 9 364:2 485:15 486:2, 22 90 9:13 106:2 136:19 169:22 170:4	176:5 245:20 253:2 254:23 255:10 260:21 276:2 278:9 90067-2904 5:16 90071 8:13 90401 4:16 91 9:16 67:10, 14, 18 174:21 175:1 176:10, 14 191:6 91367 8:8 916 5:3 92 9:18 213:25 214:6, 23 222:20 93 9:19 245:24 246:3, 7 9328 488:20 94 9:23 283:24 284:3 291:4 95 10:1 136:20 289:24 290:3, 21 291:5 482:24 955 471:7 95864-7273 5:3 96 10:4 12:16 293:19, 22
--	---	---	---	--

97 10:4	396:2	369:14, 17	accountabilit	21:15
296:8, 9, 13	441:22	404:17	y 314:23	23:14 25:3
297:22	ABNEY 3:5	405:13	315:2	28:5, 13, 17
973 6:3	abnormal	407:1, 20	327:18	35:11, 12
979-1000	298:23	418:16	accounted	36:10
7:20	aborted	430:5, 13	223:8	39:23 45:6,
98 10:7	154:6	448:21	414:14	13 48:23
297:12, 16,	abortions	479:21	accumulate	50:9, 22
19	153:4	482:18	56:18	51:2, 3, 4, 5
99 10:11	absence	485:3	accumulated	57:17 58:6,
347:10, 15	275:5	absorbed	153:16	18 67:21
389:17	absolute	205:3	accumulates	70:6, 16
390:13	199:23	abstract	153:19, 20,	71:3, 18
999 5:8	241:1	29:25	24 300:8	80:11, 19, 23
999-2232	absolutely	164:13, 15,		81:3, 11
8:8	19:11	23 165:19	accumulating	86:6 87:7,
	20:20	166:23	350:20	13, 18 94:20
< A >	27:23 30:7,	167:7, 12, 25		95:5, 10
a.m 1:14	20 37:15	193:7, 17, 20	accumulative	96:10
13:6 26:8,	38:15	214:12, 25	195:22	98:14, 23
10, 12	40:25	220:8	accurate	99:2, 22
107:23, 25	43:15 54:7	224:11, 24	247:22	100:5, 13, 15
108:2	55:21	225:1	248:6	101:3, 8, 11,
190:20, 22,	60:19 66:7	226:1, 8	258:18, 20	16, 17, 25
24 282:3	76:4 80:8	253:10	260:4	102:6
285:9, 12	108:8	256:4	270:6	103:24
287:8 290:8	111:1	abstracts	349:15	104:23
AB 385:1,	112:4	225:19	358:23	105:4, 6, 8,
11 386:5	114:21	absurd	391:13	10 107:1
abandoned	122:12	238:15	425:20	109:11
211:20	125:24	Academy	489:18	110:17, 25
212:6	158:16	316:18	accurately	111:2, 5, 6,
ability 488:9	190:8	accept	441:6	15 116:5
able 44:14	191:4	144:5	ACETAMIN	117:4, 21
61:2 62:24	195:23	177:3, 5, 6	OPHEN	118:7
144:22	220:12	acceptable	1:3 9:13,	119:6
186:24	224:1	289:5	19, 21 10:1,	120:12
231:6	229:24	accepted	13, 17, 21	123:1, 23
233:1	239:13	153:12	11:2, 5, 14,	124:10, 18
257:7	285:7	435:15	19, 23 12:1,	127:14
272:6	288:22	access 40:7	6, 7 13:10	128:8
323:23	300:3	account	17:18, 20	129:1, 11, 21
384:16, 20	302:3	158:18	18:2 19:8,	130:25
	357:2	323:12	25 20:7, 14	132:8

136:16	217:6, 15, 16,	300:7	421:15	284:19
137:21	17, 23, 25	301:11	423:8, 16	activity 56:5
141:17	218:10, 12,	318:13	424:4, 14	acts 72:16
147:22	15, 24 219:3,	336:17, 18,	426:3	actual
151:14, 19	5, 15 220:10,	22, 25	432:25	253:5
156:4	23, 25 221:2,	337:15	433:10	363:20
158:2, 13, 22	3, 6, 13	340:20	434:12	364:13
159:3, 7, 13,	222:4, 7, 14	341:9	435:7, 9	369:22
22, 24	224:4, 8, 10,	344:7, 20, 23	437:20	ADAMS
160:10, 12,	15, 20 225:6	346:2	438:23	4:15
17 161:1, 3,	226:9, 17, 23	357:5, 13, 14,	439:15	add 16:11
6, 9, 12	227:4, 8, 19,	20 360:22	441:1, 11	21:4, 7
162:3, 4, 9	21 228:18	362:1, 14, 21	442:21	189:25
164:17	230:8, 20	363:15, 16,	443:16, 17	243:16
165:2, 6, 8	231:5, 8, 19	22 364:1, 2,	452:5, 16	325:20
167:8, 9	236:3	5, 6, 7, 8, 18	455:6, 18	369:1
168:2, 21, 23	237:1, 2, 12,	365:6	458:11	486:15
169:10	14, 16, 21, 25	366:9, 21	460:9	added
181:18	238:4	367:2, 17	461:3	310:4
183:17, 20	241:4	368:14	463:14	486:16
184:12	242:3	375:3, 12, 18,	467:16	Adderall
185:24	243:3	20 376:4, 10,	469:2	353:19
188:4	253:12, 15	13 377:23	472:7	adding
189:14	255:16, 18	378:7, 12	476:4, 5	471:22
194:13, 15,	256:5, 6, 8,	379:16	acetaminoph	486:13
24 195:3, 7,	12, 15 257:4,	382:17	enal 398:17	addition
21, 25	9, 22 260:11	386:14	acetaminoph	231:4
196:12	262:16	394:12, 15,	en-positive	265:7 402:7
197:1, 6, 11,	263:4, 5	22 395:2, 15	345:12	additional
15, 21 198:5,	266:7	396:7, 16	acid 241:17	243:17
12, 15, 17, 24	267:9	397:1, 20, 24	acknowledge	309:16
199:14, 25	269:14, 18	398:8, 18	72:4, 8	411:14
200:15, 20,	272:19	399:2, 15, 25	130:2	418:1
25 201:4, 14,	273:1, 5, 9	400:6, 8, 19	ACKNOWL	address
19, 22 202:2,	277:14	401:1, 3	EDGMENT	14:6
24 203:25	279:3, 10, 18	402:25	12:20 490:1	202:12
204:7	280:19, 23	408:9	ACOG	248:24
205:1	281:23	409:1, 5	66:25	323:23
207:1	282:19	412:10, 13,	119:24	461:21
208:2, 13, 15,	286:10	16, 24 415:4	142:11, 15	462:5
20, 25 209:6	287:25	416:18, 20,	action	addressable
215:6, 8, 10,	288:13	25 417:11,	488:11, 13	178:7
13, 18, 21, 22	298:22	22 419:13,	activities	addressed
216:8, 24	299:3, 17, 20	19 420:11		181:11

195:13	263:5	460:25	226:9	advisor
416:6	264:16	464:13	255:16	108:25
466:22	265:11	468:23	257:8, 14, 20	145:16
addressing	266:18, 19,	476:7 481:2	260:10	advisors
181:9	23 267:4, 10	ADHD-	322:2	114:13
ADHD	271:13, 16,	positive	366:21	advocate
10:14 21:4,	17, 18	377:14	367:2, 11, 12	39:4 303:12
8 40:11	278:17	379:19	396:17	affect
41:21, 22	282:18	381:4	402:10	105:22
42:4, 12, 22,	337:15	adjust	admission	191:24
24 43:1, 7,	349:7, 12	369:24	14:18	404:20
18, 22, 25	355:17	371:25	admitted	affirmative
45:14	356:21	416:24, 25	256:10	275:19
50:20 51:2,	357:1, 16, 19	461:24	advanced	afraid
3 87:7	362:1	adjusted	40:6	171:12
91:5 93:13,	363:22	369:25	advantage	age 13:21
15 96:14	364:6, 8	402:12	180:18	41:23, 24
109:12	365:6	414:8, 17	266:15	42:3, 11, 22
122:14	366:10, 13	473:1	277:13	43:4, 6, 24,
123:1, 9, 24	377:22	adjusting	279:1	25 422:3, 4
125:1, 4, 23	378:11	397:18, 19	287:21	423:3
126:11	379:15	413:14	312:23	425:15
127:14	380:2, 16	administered	315:7	471:15, 21
128:9, 25	381:2	158:2	358:18	472:4
129:12	382:19	194:24	453:7	aged 60:10
132:9	386:14	207:9	advantages	agencies
160:7	392:5	208:25	276:8	332:5
161:13, 23	397:3, 21	210:10	287:24	agency
193:1	398:10, 19	215:6	Adverse	334:14
203:3	401:9	220:10	11:20	agent
205:25	408:9	225:6	19:10 20:1	162:13
226:25	409:2, 12, 18,	259:21	35:13	163:21
228:14, 23	23 411:8	367:17	36:11	ages 471:22
231:4, 17, 20,	412:20, 21,	402:20	92:25	agnostic
21, 25 232:6,	24 415:5	administratio	136:17	23:23
7, 13, 24	416:10, 17,	n 57:5	253:11	ago 16:5
233:11	19 417:6, 11,	159:12	420:12, 17	55:23
234:5	15, 17	162:12, 17	421:16	56:14, 24
237:2, 6, 12	419:12, 19	163:20, 24	422:9	59:4 63:22
241:4, 7	422:8, 18	194:13	424:4 426:5	70:8
243:4	426:3	195:20	advised	142:16
249:8	429:20	215:10, 23	372:25	149:25
257:4	431:20	216:9		150:4
262:14, 15	432:10			157:2, 5

217:11	135:6	362:6	AMANDA	118:21
223:7	270:16	394:17	2:7 54:3	130:16, 17
226:1	386:8, 18	Alabama	amanda.hunt	133:3
277:8	394:10	4:22	@kellerpost	137:16
281:15	405:7, 10	alarm	man.com	192:21
283:22	433:3	124:16	2:8	194:23
316:12	466:14	218:9	amazing	195:1, 3, 6,
317:9, 12	agreeing	alcohol	70:19	11 197:14
342:13	236:10	163:3	amended	198:7, 10
451:16	237:4	Aleman	15:23	202:19
453:5 463:7	agreement	17:1, 6	347:17	207:6
agree 64:25	14:24	30:24 31:1	390:12	209:14
133:24	213:14	53:9, 14	American	210:9
140:1, 16	284:12	130:15	64:2	211:4
175:15	293:7, 20	459:15	119:24	217:4
186:18	294:5	alleles 411:7	171:23	224:17
192:19	agrees	ALLEN	172:17	225:12, 13
205:11	206:25	4:20	174:8	227:11, 18
207:19	agruner@du	Alliance	175:16	230:23
226:7, 11	anemorris.co	6:11	176:15, 16	232:4
234:1	m 7:19	allowed	Americas	236:1
235:21	ahead	46:22	7:2	240:18
236:19, 23	24:17 74:8	131:20	Amisota	242:22
249:18	78:25	134:12	63:16	252:22
260:16	90:18 99:8	313:17	amniotic	256:21
288:7	169:6	326:16	156:19	257:6
289:4	214:16	allows	amount	304:18, 20,
299:14	263:11	327:18	153:9	21 305:3
301:5, 15	285:13	AlphaSites	168:1	306:4, 9, 18
309:18	308:25	109:15, 16	191:24	324:25
345:19	362:24	alter 176:21	235:2	326:3, 5, 11,
356:10	363:1	alterations	237:19	21, 25 327:6,
360:8	472:20	11:23	321:19	7, 20 328:2,
381:9	Aid 8:4	alternative	362:24	6, 9, 12, 17,
382:9	aim 449:13	146:3	458:10	22 329:15,
389:10	aims 373:14,	alters	Ana 63:14	17, 23 330:1,
403:18	15	105:10	83:23 84:1,	4 332:22
404:25	al 9:15, 19	Altogether	2, 3	333:4, 22
417:16	10:7, 20, 24	363:25	analyses	334:2, 11
422:17	11:16, 21, 24	364:15	231:21	337:4, 12
425:5	12:3, 7, 10	456:15	378:25	340:14
461:15	40:13	486:19	413:11	344:21
agreed	361:16, 17	Alvaro	analysis	348:13
133:20		110:2, 5, 8	11:2 85:20	350:7

351:4	Andrea	7 97:4, 14,	259:6, 24	315:17
364:11	1:11 9:23	17, 25 98:5	264:3	327:23
365:1, 2	10:15	100:9	281:10	answering
367:8	13:12, 20	101:6, 21	283:19	46:23 52:7,
369:21	488:4	104:9	284:22	8 74:11
371:15	490:12	106:4, 10	305:4, 8	94:18, 19
377:21	anesthesia	107:5	308:24	137:4
378:1, 2, 5	259:3	116:16	310:15	161:11
379:8, 10, 11,	Angeles	117:25	311:10, 12,	188:25
14 380:17	5:16 8:13	119:10	13 312:7	189:8
381:23	anger	120:24	313:5, 9, 10,	477:15
382:1	172:14	122:8, 13, 15	15, 20	answers
388:4	angry 174:4	123:5	314:13, 14	108:24
404:12, 13	animal	128:12	315:21	187:11
408:7	373:12, 13,	131:2	326:18	316:2 490:5
418:25	23 374:8, 9	132:12	342:5	antidepressa
419:3	427:23	134:7, 19, 20,	343:22	nt 241:17,
431:10	428:1, 14	21, 24 135:5,	362:2	22 242:1, 11
440:2	Ann 147:16	9, 19 136:3	366:5, 6	243:6
456:4, 10, 24	ANNE 7:18	158:1	367:15	antidepressa
459:25	11:10	163:17, 18	370:21	nts 242:7,
464:21	393:2, 5	165:17	402:22	17
473:19, 21,	anonymous	183:3	434:2, 5, 6	antidepressio
23 475:5, 19	176:2	186:17, 20,	440:12	n 242:1
477:20	answer	21, 24	446:16	antidepressiv
482:16	18:23 20:5	189:11, 18	459:4	es 243:6
484:5 487:6	22:23	190:2	472:16	antihyperten
analyst	24:16, 21	193:13	476:3, 19, 25	sive 218:17
88:2 152:16	33:11 34:6	196:19	477:5, 17	anxiety
analysts	35:17 40:3	199:22	answered	240:25
85:23 88:3	45:10	200:8, 9, 12	24:11	437:22
analyze	46:21 49:3	201:9, 11	50:12 52:3	anybody
165:5	52:9 55:19	202:12	73:13	80:23 81:2,
304:6	57:21 61:8	203:11, 14	75:11 79:5,	5
332:6	65:16, 17	205:18	21 95:20	anymore
387:6, 21	73:23 74:8,	219:19, 22	100:20	159:19
450:16	16 75:12	220:2	163:8	350:25
453:2	76:9 77:12	228:7	187:1	466:12
analyzed	79:23	229:1	192:6, 8	anytime
291:18	84:11 88:9	231:24	200:18	26:2 50:1
300:24	90:13	232:18	201:12	56:11
371:17	91:25	233:1, 5, 15,	236:9	APAP
387:1, 4, 7,	93:18	16 235:18	311:8	417:5
10 414:5	94:23 96:6,	241:8	313:1	429:19

430:24	316:24	424:1, 3, 7,	260:21	12, 14, 16
431:20	319:3	11	288:2	412:9, 11, 12,
432:9 481:2	323:15	aquinn@mof	322:12	15 415:5
apart 160:6	appreciate	o.com 7:14	366:7	416:11
327:7	29:1 48:4	arbitrary	372:13	419:20
329:15	51:8 59:17	418:10	394:3, 5	460:25
apologize	60:15	archival	395:4, 7	468:23
264:8	61:23 67:7	196:3	426:22	469:3, 8, 9
apparently	97:23	archive	465:21	471:4 476:7
39:18	103:21	185:11	articles	ASD-ADHD
212:17	126:12	196:3	317:21	1:3 13:10
appear	144:10	archived	319:9	ashamed
205:24	198:7 471:5	183:13	artifactually	139:11
246:11	appreciated	archives	205:23	ASHLEY
263:6	145:9	157:1	artificially	2:4, 6 7:13
276:22	approach	areas	415:3	ashley.barrie
292:4	102:9	446:14	ASC 464:13	re@kellerpos
297:21	approached	argue	ascertainmen	tman.com
314:11	21:10	463:16	t 391:14	2:7
369:15	234:13	argued	ASD 10:15	ashley.keller
APPEARAN	approaches	432:22	50:20 51:4,	@kellerpost
CES 9:3	100:11	arguing	15 52:1, 4	man.com
appears	appropriate	159:1	96:15	2:5
154:25	79:15, 19	247:19	109:12	aside 38:21
apples	251:7	395:18	205:25	asked 25:17
454:18	308:11	444:12	233:24	40:17
applicable	316:2	463:12	235:12	50:12 56:4
412:4	356:11	argument	236:3	73:13
application	489:6	394:17	237:2	75:10 79:5,
319:16	approved	412:14	241:4, 18	20 81:1, 9
449:6	286:1 373:8	461:19	242:4	88:18
applied	approximatel	arguments	243:3	95:20
311:4	y 54:22	303:14	262:16	98:25 99:2
319:8	196:25	ARNOLD	263:4	101:2, 9, 25
333:24	198:2, 4	6:16	264:15	106:22
applies	345:13	arrows	266:19, 24,	112:19
122:13	April 76:2	408:21	25 267:4, 10	122:6
219:20, 23	115:8, 12	art 86:5	271:13, 16,	134:14
271:8	118:25	article	17, 18 392:5	135:22
272:21	119:4	151:25	397:21	139:21
332:15	324:21, 22,	176:6, 17	398:19	143:6
410:1 425:3	23 330:22,	191:8	401:9	174:11
apply	25 421:9	245:13, 19	409:24	181:4
272:22	423:5	246:12	410:2, 7, 8,	185:5

189:4, 9	129:2	aspect	96:13	130:5, 8, 19
193:6	133:5	279:5	107:13	131:5
205:13	145:12	437:9 462:8	123:23	184:18
213:2	173:12	assertion	161:22	186:10, 12
217:7, 19	179:15	486:8	184:25	199:2
220:21	180:5, 6, 9	assess	200:21	200:25
222:24	182:9	318:25	202:25	209:25
227:2, 3, 7	188:2	319:1	203:2	211:11
233:12	189:15	419:6, 7	205:25	216:10, 12,
237:21	190:3	assessed	215:11	16 225:5
241:5	191:6, 19	155:3	217:1	231:7
259:2	192:22	210:4	224:9	235:11
276:20	205:9	231:2	226:24	237:11
323:10	232:18	322:7	228:23	241:3
331:16	234:4	337:4	233:24	242:3
345:18	247:16	452:1	234:9	244:4, 12
352:11	263:25	460:22	240:8, 16, 20	250:17, 25
365:22	274:4	476:1	241:12	251:6, 8
371:9	279:15	assessing	242:11	252:4, 16, 19
385:24	283:16	76:11	249:5, 6, 8	253:15
417:25	316:3	304:24	298:23	256:5, 8
427:10	318:15	335:9	411:8	257:2, 4
445:9	324:6	337:10	429:20	262:14, 18
452:13	333:20	451:25	430:1, 24	263:3, 8, 18
462:22, 25	338:25	assessment	431:20	268:4
463:2, 6, 17,	339:24	120:4	469:6, 7	269:22
25 476:17	340:5	207:17	476:6	270:20
477:16	342:17, 21	211:14	associating	272:5
478:21	343:14, 20	265:7	198:23	273:4, 13, 15,
480:21	353:11	324:10	401:8	24 275:23,
481:15	366:1	380:14	Association	24 279:13,
asking	370:20	454:20	9:13, 19	19, 23 280:3,
26:19	385:18, 21	assign	10:2, 17, 21	20, 24
76:21	411:18	309:10	11:2, 5, 13,	286:10
83:18	414:13	assistant	19 17:17	291:2
87:13, 14, 17	441:6	82:23	23:13, 20	292:3, 4
92:15 95:4	464:2	286:7 287:6	28:16 45:6,	298:25
103:23	477:13	associa	13 46:4	312:12
104:21	478:2, 20	286:19	47:5, 24	361:24, 25
110:16	483:23	associate	50:8 51:1	376:25
112:7	asks 161:9	8:16	63:25	377:5
113:3	188:1	associated	118:19	382:16, 22
120:20	220:17	19:9 20:1,	128:25	386:13
126:8, 10, 14		8, 14 35:13	129:5	395:6, 24

396:20	Assuming	author	160:7	265:4
397:19	59:8 103:7	36:22, 25	209:10	276:23
398:16	460:16, 18	40:24 72:5,	226:18, 24	291:8
409:12, 22	assure 231:1	6 130:9	227:9, 10, 14	454:4
410:3, 11	attached	138:20	228:9, 16, 19,	456:22
412:8, 23	12:15	140:18	23 230:2, 5,	459:1, 20
415:3	489:11	149:5	6, 9, 10, 13,	465:21
416:17, 22,	490:7	253:6	16 231:3, 5,	468:12
25 417:10,	attempt	296:25	8, 10 233:13,	Avella-
12 418:19	116:4	354:9	18, 21 234:2,	Garcia's
420:11	117:3	428:25	5, 6, 9	465:24
431:15	138:7, 9	authored	235:23	Avenue
432:9, 18	168:1	272:15	236:13	3:13, 18
433:4, 9, 12	170:15	authorities	238:23	4:4 5:2
455:24	attempting	233:20	239:2, 4, 7,	6:8 7:2, 8
456:3	316:23	authority	18, 22 240:1,	average
457:22	attendant	470:16, 20	3, 6, 8, 16, 20	42:3, 22
458:6	116:23	authors	241:12	43:6
459:2, 6, 8,	attention	58:4 78:24	242:8, 12, 18	157:12, 14,
12, 18	11:3 12:6	130:3	265:12	18 300:12
479:20, 25	57:2 68:20	297:1	356:25	333:25
480:7, 9, 10	297:5	464:15, 18	397:3	362:25
481:13	Attention-	Autism	398:10	averaged
associations	Deficit	10:15	411:8	319:9
103:4	10:14 11:6,	11:15 12:7,	417:12, 13,	avoid
148:11, 13	14	9 48:25	15, 18, 20, 22	318:23
185:1	Attention-	50:6, 10	422:8, 17	aware 24:4
203:6	Deficit/Hype	52:18 87:8	426:3	46:25
232:9	ractivity	91:19, 22	451:11, 18	56:22
233:21	10:18, 22	93:13, 15	453:13, 16,	80:10, 22
236:5	430:25	94:4 95:18	22, 23 454:1	88:17
237:1	attenuated	97:6 104:1,	455:16, 20	149:10, 12,
418:13	262:21	24 107:2	458:7	17 152:19
421:14	attorney	110:17, 18	459:3, 12	202:14
431:13	488:10, 12	117:22	467:16, 25	233:5
480:18	489:15	119:7	468:7	239:11
assume	attorneys	120:13	470:24, 25	306:7, 25
114:5	281:12	122:7, 9, 10	471:10, 11	309:22, 23
460:15	AUGUST	123:1, 9, 12,	475:7 481:2	318:11, 15,
assumed	1:6 13:5	14, 15, 19, 24	available	19 332:20
148:15	228:18	124:6, 10, 23	109:11	333:2, 21
assumes	435:15, 21	125:2, 4, 23	Avella-	335:7
213:22	488:24	126:11	Garcia 12:7	AYACHI
		129:11	53:8, 14	

2:22	28:3 29:8	25 119:5, 10	237:5, 18	354:12
< B >	31:4, 24	120:9, 11	238:22, 24	355:18
BA 247:5	33:15 34:8	122:5	240:7	365:3, 22
babies	35:17 36:6,	127:10	241:5, 10	366:20
204:8, 24	21 38:11	134:4, 7, 20	242:6	367:16, 23
208:8, 12	42:1, 17, 20,	136:5	244:13	368:4
baby	21 43:5	137:3, 6	245:24	374:16
153:17	44:2, 20	138:1, 6	246:5	377:11
154:8	45:10	139:24	249:9	380:15
156:20	46:11 49:3,	140:17	252:1	384:8
161:16, 18,	16 50:5	143:16	254:16	390:8
21 162:3, 4	51:25	144:16	257:13	392:12
180:12, 15,	53:17 54:5,	145:8, 15	260:1	393:22
20 182:8	17, 20, 22	151:17	267:21	398:7
192:12, 15,	55:18 57:3,	152:12	270:15	401:10
25 196:2	13 59:18	158:1, 12	274:1	404:23
200:21	60:5, 17	159:9	275:8	405:19, 22
203:16, 22	61:20	162:7	281:9	407:8
205:2	64:17	165:17	283:24	410:21
206:23	65:12, 23	169:22	284:2	420:9, 19
207:2	67:8 68:24	170:2	289:24	423:6
208:20	70:3, 15	174:14, 21	290:18	425:22
209:4, 6	71:1 73:9	191:2, 5	292:6	428:5
228:20	75:3, 4, 23	192:4	293:2, 22	438:9
244:25	78:16 80:6,	193:12	296:9	445:6
396:23	10 81:23	196:10	297:12, 17	447:10
baby's	82:18	197:20	307:4	448:8, 13
182:15	83:15	201:10, 16	308:14	450:21
203:25	84:21	203:15	312:25	464:10
Baccarelli	85:21	206:10, 24	313:7, 22	465:19
1:12 9:23	87:21 90:7,	210:8	316:6, 22	467:20
10:4, 16	19 92:18	213:25	318:5	471:6
12:12	94:3, 17	214:4, 22	319:23	478:19
13:13, 20	97:3, 4, 11	219:19	320:6	483:3, 7, 23
14:7, 8	98:1, 9	221:17	321:10	487:23
15:8, 12, 16,	99:9 100:2,	222:16	324:16	488:4
19 17:15, 16	9, 19 103:21	224:23	326:20	490:12
18:22	104:4, 21	227:8	327:8	BACCAREL
19:19 20:5	106:24	228:10, 17	330:14	LI_000298
22:24	107:5	229:20, 25	332:13, 20	9:23
23:19	108:6, 9, 14	231:16	335:8	BACCAREL
24:15, 16, 23	112:6	232:23	347:10, 13	LI_000309
25:8 27:21	116:13	233:25	348:4	9:23
	117:2, 19, 20,	235:15, 21	350:19	

BACCAREL	91:20	bad	79:25	349:21	based	85:4,
LI_000427	157:15	135:23		351:11	11	120:5
9:16	209:8	251:11		352:17	124:17	
BACCAREL	226:16	254:20		365:4	157:25	
LI_000431	back	20:25	baffled	366:7	168:2	
9:17	23:4, 5		119:20	373:22	196:21	
BACCAREL	26:12		Baker	374:23	202:13	
LI_000464	44:14 45:1	10:20, 24		377:12	207:5, 14, 15,	
10:11	98:20	11:21, 24		379:9, 18, 21	16 212:18	
BACCAREL	106:21	20:12		380:20	221:20, 21,	
LI_000482	108:2, 6	40:13, 16, 17,		382:2	25 222:1	
10:11	144:13	23 41:4, 15,		383:2	235:9	
BACCAREL	190:24	18 44:4, 9,		384:12	243:24	
LI_000499	217:9	10, 18 45:4		386:8, 19	290:11	
11:3	229:17, 20	48:7, 17		402:8	306:19	
BACCAREL	242:25	57:14, 24		407:9	323:11	
LI_000501	245:12	58:5, 6		420:10	324:5, 10	
11:4	260:20	81:8 82:18		426:22	364:20, 24	
BACCAREL	264:2	121:23		427:2, 13	365:19, 20	
LI_001185	267:20, 22	122:17, 24		428:8, 25	399:10	
11:8	279:17	123:8		448:23	410:13	
BACCAREL	281:25	124:6, 8		483:8, 9	411:13, 15	
LI_001209	287:12	127:9, 20, 22		484:1, 23	412:2, 17	
11:9	290:7	128:7		486:13	416:15	
BACCAREL	292:24	151:5, 12		Baker's	443:15	
LI_001360	293:2	158:17		44:9 48:21	461:3	
12:4	311:12	182:20		372:23	470:15	
BACCAREL	320:19	194:12, 21		428:14	471:3	
LI_001364	331:6	199:2		483:25	485:10	
12:5	347:8	203:2		Bandoli	bases	
BACCAREL	351:20	210:9		12:3	407:18	
LI_014239	389:16	224:2		437:15, 19	basically	
9:11	390:5, 9, 13	249:7		Bar	120:1	
BACCAREL	398:25	256:21		138:23	basing	
LI_014242	400:3	282:21		447:21	470:18	
9:12	402:18	337:14		barber	basis	14:21,
BACCAREL	415:9	339:21		147:12	25 284:21	
LI_014576	444:25	340:2, 4		BARLOW	bathroom	
11:17	445:6	342:11, 18,		5:1	188:19	
BACCAREL	478:15	21 343:3, 13,		BARNES	389:20	
LI_014580	483:20	14, 15 346:6,		5:9, 20 6:1,	battery	
11:18	backed	8, 18, 19		4, 13	265:13	
Baccarelli's	background	347:25		BARRIERE	Bauer	
42:10	125:11	348:9		2:6	147:16, 18	
				base	324:7	

148:23	49:17 50:6	118:12	beyond	482:9
149:2, 4	53:19	119:13	71:14 230:7	485:24
286:24	58:11	120:11	bias 24:6	bile 156:22
289:7	66:25 71:7	122:16	242:2	205:5
BDNF	88:3 93:2	127:12	277:21, 23	billing
105:11	99:1	155:16	304:18, 20	113:22
Beach 5:8	109:23	322:11	318:23, 25	114:2
bearing	110:9	361:9, 11	319:1, 4, 20	bills 145:11
290:16	115:8	believes	325:24	binder 30:6
437:13	119:5	116:13	335:10, 14	296:17
BEASLEY	121:19	127:13	377:6	Binders
4:20	128:6	403:10	396:11, 13,	12:10 30:1,
beautiful	137:25	believing	19 404:19	2
70:24	148:12	19:17	461:11	biochemist
becoming	150:22	Bellenger	485:22	152:17
118:8	151:19	152:17	biased	197:5 302:7
beginning	155:8, 18	302:6, 9	159:2	biological
39:15, 18	163:8	303:19	231:8	168:8 376:3
221:24	193:2, 18	355:14	243:4	biologically
266:1	196:22	benefit	251:17	229:2
271:10	199:24	309:17	261:6, 20	Biomarker
begins	221:4	best 51:9	263:16	9:18
359:14	226:14	60:25 68:6	265:21	154:14
behalf	232:23	77:16	279:6	163:6
13:24	241:11	98:22	323:8	164:9
111:21	247:15	117:18	334:2, 23, 24	165:25
behave	254:10	120:10	335:2, 17	182:12
139:17	267:5	144:25	395:4	193:11
172:21	282:18	203:10	biasing	302:20
behaving	295:10	294:13, 20	375:9	361:19
172:21, 25	315:14	308:23	Big 8:14	401:5, 7, 8
behavior	355:4	309:1	72:22	Biomarkers
244:15, 20	360:8	363:8 488:8	118:12	11:13
261:5, 19	364:17	better	154:7	166:2
265:10, 16,	398:13	70:20	180:18	169:11
20	406:2	74:15	262:17	361:17
behavioral	409:13	127:23	300:6, 10	biostatistic
265:11	414:10	182:8	301:9	288:16
believe	424:4	251:14	482:14	Birth 11:20
19:25 20:7,	426:2, 24	376:23	bigger	12:2, 10
9 34:9	453:19	458:5	41:13	36:16
35:12 36:8	461:7 464:8	482:8	206:23	99:15, 16
45:20, 23	believed	486:12	417:19	195:7
46:2 48:22	36:12		464:1	204:11

239:5	bothering	355:17, 21	233:14, 18,	busy 285:23
245:6	25:22	447:9	22	
413:11	bottom	450:16, 18,	BRENNAN	< C >
414:5	110:13	19 463:10	6:1 20:12	C112 3:6
420:13	179:19	brains	427:1, 3	Cabrera's
421:16	191:11, 15	140:25	430:20	31:7 34:24
422:2, 9, 14,	247:10	450:15	448:23	Caffeine
16, 18, 21, 25	255:13		449:12	9:19
423:1, 2, 18	298:13	Brandlistuen	450:10	CAIN 7:12
424:15	391:12	265:4	Briggs	calculate
425:1, 2, 4,	448:16	276:23	130:21	372:7
14 426:5	Boulevard	291:6 433:8	bright 373:7	calculated
bit 128:4	4:16	Brandon	bring 82:6	372:5, 8
149:9	bowel 154:7	427:5, 6, 9,	143:8	484:21
206:4 348:1	196:1	22 428:4	303:13	calculations
blew 331:9	box 310:15	429:7	Broadway	372:18
blind 171:16	boys 456:20	430:20	4:9	California
blood	457:14	brands	broke 454:4	1:18 4:16
300:24	Bradford	110:25	456:22	5:3, 16 8:8,
301:6	118:21	break 106:5,	broken	13 488:18
361:23	130:15, 17	17 188:19,	362:15	call 27:13
394:11, 14	132:24, 25	22 289:18	471:10	44:14
396:17	137:15	292:16	brought	79:11
400:18	209:14	342:22	12:10	88:20
401:3	230:22	343:12, 15,	162:24	112:2
422:5	320:23	17 346:9, 13	316:17	116:19, 25
423:19	324:25	347:24	BROWN	146:11
425:12	325:7	389:19	8:11	171:9, 10
blown 46:1	326:3, 4, 7,	444:17	bulletproof	173:3
90:2 331:8	13, 20, 25	455:9	323:25	188:15
board 62:5,	327:1, 6, 16,	456:5	bumped	190:16
9, 19 171:18	20 328:2, 5,	457:6, 17	115:23	316:23
body 64:20,	9, 11, 16, 21	breakdown	bunch	called 65:2
21 199:14	329:1, 8, 16,	372:4	278:1	66:15
323:9 376:7	22, 25 330:3,	breakdowns	395:25	115:22
BONESTEE	15	56:20	396:6	182:12
L 8:11	Brain 10:19,	breaking	burden	222:21
book	23 11:7	127:3	195:4	223:6, 10
288:16, 17	40:11 92:8,	breast	208:2, 17	224:7
Boots 6:10	9 93:4	208:19	business	239:19
born 460:23	103:2		47:22, 24	295:19, 20
Bornehag	105:5, 21	breastfeeding	143:13	304:3
291:9	118:4	208:13	179:3	449:6
BOSSO 7:7	349:18	232:12, 24		461:19

calling 87:24	card-	200:21	20, 21, 25	418:22
Campbell 1:16 4:3	carrying 449:25	202:23	454:8	419:18
13:17	cardiovascul ar 126:2, 3	203:8	455:17	430:6, 12
488:2, 16	care 332:6	217:19	457:17, 20	431:3, 15
CANAAN 7:1	career 178:4	220:21	458:7	causality 128:2, 16
Canada 10:7, 10	392:16	223:21	catch 231:14	268:3
43:6, 13	carefully 45:17	240:1	369:10	270:19
62:16	275:22	242:5	categories 125:16	380:14
221:7	382:5	249:6, 7	364:12, 14	430:8
260:15	475:24	292:1	categorizatio n 196:12	causally 96:14
295:23	489:4	294:17	categorized 306:19	282:20
339:10	CARLSON 3:21	305:23	category 451:12	476:6
Canadian 9:14, 22	Carrie 1:15	309:21, 22	CATHERIN E 2:21	causation 126:9
11:20	13:17	334:2	catherine.he a cox@lanierla wfirm.com	129:10
cancer 126:1, 4	488:2, 16	375:8	2:22	130:14, 18
407:25	CARTMELL 3:17	377:22	Caulo 110:1	132:7
candidate 69:24, 25	carve 252:23	392:5	111:20	133:13, 18
candidates 69:20, 22	Case 1:4	393:13, 16	Causal 10:11 47:5,	134:3, 11
70:2	14:18	401:9	23 117:22	136:6, 22
candidly 226:2	23:13 31:6	417:24	118:14	137:2, 7, 13,
capacity 310:4	34:14 35:6	434:18	119:7	19 192:17
capture 168:1	38:2 46:1,	456:12	120:13	201:3
captured 247:20	13 47:2, 9	480:13	123:2	231:21
captures 226:12	62:1 71:20	485:17	127:15	232:10
247:22	76:13	486:5	128:9, 20, 24	270:8
248:1, 2, 8	96:10	case-control 391:16	129:5, 22	272:23
256:18	108:19	Cases 1:6	130:5, 8, 11,	273:8
394:14	115:10	42:24, 25	19 131:5	288:3
capturing 266:20	147:5, 13	221:2, 14	136:15	292:1
	161:13	365:10, 14	323:5	305:20
	162:1	383:10, 21	359:17, 22	306:4
	181:3	391:14, 21	360:12, 15	309:13, 21
	182:16	471:14, 18	361:14	311:18
	184:17, 20	473:18, 20	397:2	361:7
	193:2	485:5, 8		407:21
	199:1	486:13, 15,		412:16
		16		419:12
		Cassoulet 10:7		cause 91:22
		169:18		93:15 94:4
		295:3 302:9		95:18, 23
		CAST 453:11, 18,		96:12 97:6

124:8	423:16, 17,	Certified	403:1	checking
161:10, 12	18 434:12	1:17, 18, 20	419:25	85:6
167:18	caution	62:5, 9, 19	421:19	chemical
209:9	299:18	63:1	423:6	18:12 96:9,
226:18, 24	CDC 83:8,	171:18	424:13	21 154:15
227:9	13 233:20	456:10	466:9 491:3	155:5
228:19	239:4	488:2, 3, 17,	changed	163:6
230:9	241:20	18, 19, 20, 21,	212:22	182:15
231:20	Century	22	388:11	183:21
232:13	5:16	certify	changes	185:12
234:2	certain 67:5	488:3, 5, 10	105:8	chemicals
235:23	95:23	490:4	235:5, 7	93:6 152:3,
236:12, 19	105:15	cesarean	244:15, 19	20 153:9
237:6, 10	216:4	401:12	387:14	155:10
238:23	251:18	402:21	489:10	156:8, 10
239:2, 7, 8, 9	426:12	cessation	490:6	164:11
240:1	certainly	351:20	changing	183:11, 18
242:8	53:7, 8	cetera	426:4	184:18
277:24	85:25 89:9	325:19, 24	chapter	192:9
399:23	90:5	371:18	397:17	196:1, 7
408:9	209:17	391:17	CHARCHA	202:17, 21
409:2	221:15	chain	LIS 5:14	206:16, 20
417:5	222:3	406:22	CHARGE	336:19, 20
429:22	227:24	418:3	66:15	447:2, 8
caused	374:9	chair 70:25	charity	Chen
210:2, 3	certainty	challenging	477:14	291:12
239:15	199:23	416:12	chart 10:3	cherry-pick
242:18	203:9	chance	258:18, 19,	273:19
424:4 426:3	230:21	14:19	20, 22, 25	274:2
causes 87:7	236:2, 4	31:23	259:17	cherry-
125:19	241:1	59:17 60:1	260:17	picking
126:1, 2, 6	391:22	179:10	290:21	269:7
137:21	392:1	180:2	378:5	274:8, 9
161:22	398:15	change 16:1,	charts	Chicago
162:5	CERTIFICA	14 35:3	158:20	2:11
227:14	TE 488:1	50:3	258:6, 7, 13,	child 18:13
230:2, 5, 10,	CERTIFICA	105:17	24 259:19	42:3 66:19,
13, 16 231:3,	TE	157:2	260:3, 9	20, 22 91:6
21 232:7, 24488	256:25	367:5	94:5 95:18
312:4	12:19	257:1	check 52:22	97:6
causing	certifications	299:13	72:24 78:2,	161:10, 12
182:17	407:22	320:14, 17	19 85:5	206:11
209:7		328:25	246:16	227:10
415:3		329:2, 7	476:22	231:20

232:24, 25	19, 22, 24	circumcision	cleaning	clinical
234:2	364:5	204:19	383:16	258:17, 18,
235:23	366:25	207:3, 8, 12	clear 70:9	19, 24
236:13	368:21	circumcision	90:3 92:6,	259:19
237:6	377:14	s 204:5	15 120:5	421:19
240:21	379:20		136:23	423:7
242:4	380:1	circumstance	137:20	424:13
265:9, 15	381:5	206:3	216:6	426:4
273:6	382:19	citations	238:5	445:21, 22
286:11	397:23	37:23 38:3,	250:7	450:14
351:23	409:19	14 276:21	302:3	461:18
353:25	410:5	cite 154:9	320:3	clinicians
366:10	458:15	cites 432:11	327:23	212:14
398:10	460:22, 24	citing	328:12	Clinton 8:2
432:10	461:12	431:21	330:11	clip 189:17
472:2	462:16	City 3:19	426:11	clone 317:25
childbirth	468:23	4:4 70:19	cleared	close 412:18
194:25	470:24	197:13	377:7	closely
216:10	child's	claim	clearly	183:24
Childhood	158:4, 15	207:11	18:15 27:4	closer-in-
9:13, 21	choice 69:18	466:17	29:3 35:20,	time 195:20
11:15	choose	clarified	21 36:1	closest
12:10	210:12	397:15	65:20	148:20
18:14	chose 112:2	clarifies	77:19	Coast 70:20
232:12	144:5	466:10	125:16, 18	coauthor
397:25	300:17	clarify	128:17	297:2 302:5
453:13	393:19	42:18	129:4	coauthored
children	410:25	class 134:13	159:1	214:9
29:4, 5, 9	chosen	135:21	198:11	coauthors
41:17, 24	244:8	classes	218:19, 24	296:20
42:12 43:1,	362:24	90:23	221:8	cocaine
2, 21 61:25	363:1	classification	310:14	163:1
91:1 121:7	chronicles	432:25	331:15	coffee 82:12,
230:2, 6	185:15	classified	376:21	17
231:22	circulated	141:19	415:15	Cohort
235:13	384:17	310:8	473:15	9:14, 22
266:24	circulation	classify	487:5	10:7, 10
302:20	205:4	43:21	click 282:2	11:21 12:2,
339:13	circulus	310:11	client 14:19	10 36:16
344:13	386:17	315:8	15:4	44:21
348:23, 24	circumcised	classifying	111:22	66:19 77:5
349:7	204:8	103:16	112:7	85:19 99:2,
352:21		clean 386:22	climate	15, 16 100:3
357:10, 18,			157:2	151:6, 13

152:18	217:8	column	commencing	committee
219:21	258:1	368:14	1:14	69:21 70:1
220:5	260:15	369:6	commending	common
257:21	283:11	370:7, 11	333:16	111:13
276:12	294:15, 19	421:13	comment	239:20
279:8	295:10	431:18	118:2	commonly
295:23	303:19	434:24	247:12, 16	265:14
337:23, 25	307:15	464:11	299:25	363:5
339:1	324:9	473:8, 10	300:2, 17, 21	communicati
344:4	339:2	474:2	301:23	on 283:15
346:21	433:25	columns	303:8	285:17, 18
375:1, 10, 11	436:19	369:13, 15	333:6	470:5
378:17, 19	448:7	come 39:10	385:1, 2, 11	communicati
383:11	449:17	64:24	386:5 389:6	ons 67:16
413:11	465:13	69:12 71:1,	commentarie	community
414:6	collect	15 83:6	s 407:15	168:16
432:6	98:23	119:2	commentary	213:14
469:12	203:20	124:11	52:7 59:23	comorbidity
cohorts	224:19	198:18	74:7	125:12
17:3, 4, 5	collected	206:21	122:21	company
44:4	98:21	231:1	123:19	112:17, 20
101:15	203:16	258:8	135:1	323:15
277:13, 14	339:10, 17	263:17	238:20	comparable
388:20	400:13, 19	320:19	465:2, 4, 20	485:14
421:18	collecting	326:12	466:25	compare
coincidence	100:14	370:14	467:15	454:25
393:16	416:9	380:16	468:11	455:1, 4
	College	386:22	comments	compared
collaborative	64:2 119:25	396:23	38:19, 22	155:20
295:9	color 171:16	comes	177:17, 21	216:15
colleague	colors	54:19	178:12, 22	265:18
63:10	171:10, 16	72:20	179:9, 11	345:4, 22
72:14 83:8	Columbia	129:19	191:8	443:15
117:14	54:18	198:17, 20	247:5	455:8
295:2	56:21 57:1	326:3	297:10	486:23
307:13	68:17 69:5,	380:19	298:9, 15, 16	comparing
447:20	7 70:10, 18	481:25	389:4	29:3 222:6,
465:9, 11	83:1 84:4	comfortable	Commerce	11 454:17
colleagues	309:3, 12	14:22	4:22	comparison
63:13, 15, 19	317:6	200:13	commission	126:13
115:2	336:5	coming	490:17	competing
139:25	392:14	306:6 418:6	commit	434:23
152:16	437:3, 5	commenceme	60:16, 23	complaining
212:13		nt 488:3		312:22

complementa ry 392:11	component 266:21	323:20, 25	382:10, 13,	confident
complete 137:15	417:17	405:1, 6, 8	15 403:2, 14	141:16
165:12	components	417:19	404:21	166:25
256:14	265:15	456:18	conclusions	255:5
350:4, 7	328:7	462:5	71:23 77:5	415:12
351:6, 14, 17	464:14	464:21	83:22	462:7
391:13	compound	465:24	84:24 85:4,	469:24
467:2, 5	166:18	concerned	24 184:23	CONFIDEN
485:11	comprehensi	62:1 86:21	185:2	TIAL 1:6
completed	ve 203:14	87:5 118:7,	186:13	confirm
379:6	concentratio	8 123:10	212:18	302:14
383:18	n 162:15	164:22	330:5, 21	365:24
485:9	163:23	218:7	conclusive	406:23
completely	182:1	223:16	198:3	
18:25	183:7	322:23	240:21	confirmation
19:12 21:1	184:4, 14	418:17	concurred	392:2, 4
23:23 69:6	188:6	469:23	415:14, 24	confirmed
78:3 95:1	201:7, 21	474:24	condense	223:1
119:20	215:8, 13, 22	concerning	59:5	391:21
153:12	250:18	128:19	conduct	405:10
156:14	251:1	421:17	22:3 57:16	confirms
247:22	299:17	concerns	173:2	380:13
248:6	362:20	323:21, 24	346:22	conflating
252:23	concentratio	416:6	359:3 483:9	128:14
266:14	ns 217:1	concluded	conducted	140:14
282:5	252:3	130:19	50:17	conflict
303:2	255:18	235:10	101:8	56:2, 4, 7, 10
306:13	concept	327:3	159:20, 21	138:14, 17
411:3	164:9	487:22	348:16	140:3, 8, 9,
427:22	conception	concludes	confer 14:19	12, 18, 23
479:19	94:4	132:7	conference	265:6
486:10	concepts	conclusion	63:20	272:12
completing	275:25	16:2 72:11	117:13	355:25
383:17	concern	129:20	225:17, 19	356:19
complication	45:22, 24	226:8	conferences	436:7
239:5	124:9	263:17	63:20 82:17	conflicts
complication	148:6, 9	271:3, 23	confidence	88:23
s 422:23, 24	158:16	272:2, 9	212:7, 9	140:11
complies	167:18	307:3	381:11	356:11
434:15	194:4, 11, 19	311:5	472:9	confounded
	195:14, 15,	322:10, 19,	474:19, 21,	205:15
	17 196:11	25 326:12	22 486:21,	209:23
	262:17	330:7, 15, 17	23, 25 487:2	299:1
		331:1, 20		

confounder 236:7, 25 237:11 243:24 410:19	conscientious 436:12	33:5 123:25 128:2, 16 130:10, 13 133:6, 17 136:21 137:13, 18 163:5 164:21, 24, 25 167:15 168:8 193:9 197:6, 18 200:14 247:14 253:17 254:12, 15 270:8 286:4 331:8, 10, 13 357:23 361:20 380:7 430:8 458:20 480:19	108:24 113:20 114:3 146:17 469:22	continuing 138:1
confounders 231:9 371:19, 25 403:5 404:4, 14, 18 417:2 466:21	consensus 64:7, 11, 12, 19, 23, 25 65:2, 3, 7, 24 66:2, 9, 16, 17, 23 67:3, 5, 9 120:2 149:5, 7 240:11 318:7	consistently 460:13	contacted 54:3 71:16, 17 74:3 76:16, 17, 19 77:9 86:8 109:9 113:12 144:20, 24 145:8 150:19 151:2	contract 56:16
confounding 235:11 325:17 369:24 370:1 405:6 413:10 414:7 431:22 432:5 434:7, 11 444:13 464:13 465:25 466:1	consider 49:25 149:3 236:6 243:13, 15 482:13	consortium 66:15, 20	contacts 73:15	contradicts 406:19
confuse 102:4	considerable 413:13	constantly 301:25	contain 225:3	contribute 68:5 121:15 131:4 134:11 208:16 254:4, 7 365:1
confused 127:4, 5, 6, 7 342:10 362:12 408:20 475:13	considered 33:19 224:21 233:10 243:12 252:22 273:17 323:19 369:19 445:10 482:19	consultancy 356:4, 12	contained 16:8, 14	contributed 365:10
connect 21:15 23:8, 10	considering 243:8 344:22 419:1 422:8 482:3	consulting 86:4, 7, 25	contaminants 10:6, 9 295:22	contributes 161:10 239:6, 9
connection 46:14 47:1	consistence 46:5	consume 269:14	Content 11:1	contribution 157:10 209:5 304:18
Connectivity 10:20, 24 11:8 349:18	consistency 46:2 321:3, 4 325:23	Consumer 6:4 11:11	context 190:1 250:8 274:24, 25 275:7 281:10 380:6 425:24	contributor 208:1 288:18
	consistent 32:17, 21	contact 68:7, 9 73:3, 10 76:18	continue 27:7 188:24	control 197:8 243:15, 20, 22, 25 244:1 325:24 371:19 407:10 414:6 432:18
			continued 27:7 350:20, 21	controlled 243:9, 14
			continues 93:8	controls 365:11, 15 432:15 486:17

conversation	33:12, 23	157:19, 24	286:8, 9, 18	385:2
22:20	36:11	158:4	288:6, 11	386:1
53:24	38:14	159:14	290:22, 23	387:2
69:11	39:13	165:20	291:14	388:5
110:6, 10	40:24 41:7	166:19	293:25	391:6
116:1 148:4	43:14	168:19	294:4, 10, 11,	394:13, 23,
conversation	44:24, 25	170:13, 16	23 300:1, 19	24 396:20,
s 21:23	48:9, 18	171:25	301:4	22 398:10
convinced	50:10 52:4,	176:11, 12,	303:10	399:6
19:12 47:3,	18 62:6, 17	17, 18, 21	304:7, 8	400:14
4 118:16	64:7 68:13	177:18, 19	305:10	405:6
121:25	80:19, 20, 24	180:6	311:5	406:4, 14, 25
122:2	82:2 85:20	181:10	319:9, 10	409:10
161:4	89:22	182:2	322:2, 7, 12	413:17, 20
333:6	90:20	183:7	323:17	419:20
424:8, 10	92:22	184:5, 15	324:3	421:7
convincing	93:15 94:5,	185:6	326:22	422:1
94:10	20 95:11	188:7	328:3, 22	423:8
COOPER	98:11, 15, 16,	192:6	329:17	427:14
5:5, 7	18 99:17, 22	204:17	330:17	430:9
copied	100:6, 22	206:14	332:9, 15	446:1, 5
369:9	101:3, 18	215:4, 13, 14	337:6	453:17, 19
copy-and-	109:16	216:11, 19	338:2	454:6
paste 370:6	110:3, 4	220:5, 6	339:17	455:7
Cord 11:13	111:10, 11	224:25	345:14	458:11
300:24	112:3	225:7, 13	348:11, 14	459:4, 5
301:6	115:20, 21	227:11	349:2, 10	462:11, 19
361:23	116:1, 2	232:2, 14	355:24	463:4, 18
394:11, 14,	122:14, 18,	234:8	356:14, 22,	466:5
20 396:16	20 123:2	239:15	24 357:14,	468:8, 14
400:18	125:6, 23	242:8	17 360:16,	470:6
401:3	127:15	245:8	22 361:10	472:25
Corporation	129:12	248:13	362:17	478:24
6:10, 16	133:13, 21	253:13, 14,	363:25	479:5
7:16, 21	134:4	23 257:9, 10	364:23	484:20
356:5	138:10	260:12	365:25	486:14
correct	140:21	273:2, 10	368:17, 25	487:12
15:21 16:1,	141:18	274:18	369:2, 16	490:5
6, 17 17:21	142:5	276:13	370:12	corrected
18:4, 5	143:16, 20	278:10	372:23	250:16, 23
19:21, 22	144:6, 24	279:24	373:16, 18	415:17
21:6 29:10	145:3	282:13	376:2	corrections
31:3, 13, 25	150:16, 21	284:7	378:9	489:4, 7
32:2, 24	152:4, 9	285:15	383:7	490:6

correctly	145:6	453:4	306:6, 8, 19,	CROSS-
120:10	293:6	463:9	21, 23	EXAMINAT
178:9	347:2	475:24	307:21	ION 478:17
265:1, 22, 23	488:11, 12	482:8	309:11, 14	crossing
330:2	counter	COURT	311:19	478:4
413:18	217:25	1:1, 20	312:13	CROW 4:20
correlate	counters	13:16 23:5	314:20	C-section
159:22	461:18	189:3	317:21	259:4
correlated	countless	190:12, 17	325:3, 6, 7	401:24
213:23, 24	167:1	238:14	326:6, 8	402:1
correlates	couple	398:5	327:1, 2, 13	culprit
181:24	79:16	488:19, 21,	334:16	205:16
183:5	214:13	22 489:19	337:10	227:22
184:2, 12	223:6 261:1	covered	384:4	culprits
188:3	course	34:12	criteria	227:23, 24
correlating	30:14	402:13	329:22	cumulative
160:10	34:17	covering	criterion	196:3
correlation	36:24 37:3,	407:18	304:19	206:17
155:4, 7	12 47:6	COVID	310:9	248:14, 20
192:9	59:3 69:19	317:7	critical	250:5, 10
202:20	85:11	350:23	141:8	398:21
correlations	89:24 93:5	CPT 453:21,	225:12	curious
203:7, 8	118:15	23	337:7, 9	108:19
correspond	135:21	create	359:7	302:10
296:6	138:17	46:10	criticism	current
corresponde	153:24	218:8	276:12	283:9
nce 239:24	156:2	262:10	291:24	cut 363:7
	170:14	312:18	criticize	466:24
corroborated	208:15	384:3	172:16	467:9
470:10	213:13	456:18	254:17	cutoff
cortex 11:22	242:12	created	276:1	418:11
Costco 6:16	281:13	30:17	278:19	439:5, 13
COTE 1:6	296:24	306:20	criticized	CV 337:1
27:14	297:8	307:11	254:23	CVS 6:9
79:12, 17	299:23	369:21	criticizes	
173:4	301:9	creates	283:5	< D >
Counsel 5:9	325:9	153:10	criticizing	dabbling
6:4, 9, 16, 22	326:2	310:17	280:1	364:17
7:9, 16, 21	328:6	312:17	288:19	daily 309:12
8:4, 9, 14	333:12	credible	critique	damaging
12:17	354:3	14:25	175:17	227:15
13:14	439:19	criteria	252:17	damning
14:10	445:19	304:13, 15,	crosses	270:2
26:19	447:6	21 305:7	105:4	

DANIEL	331:22	488:8	397:13	decreased
3:12	335:5, 19	489:9	398:21	486:14
Danish	350:4, 7	490:12	399:5	decreases
12:10	351:14	Dated	439:5, 8, 15,	486:9
36:15	364:12, 15	488:24	23 440:4	deemed
85:19 99:2,	365:23, 24	dates 151:4	441:2, 4	489:18
15, 16	371:17	439:25	443:18	deep 45:19
375:10	372:6, 9, 10	440:14, 16	489:15	78:20
413:11	376:22	dation	DC 5:22	134:24
414:5	379:6	279:24	6:15 7:8	Defendant
DANNY	381:18, 23	Daubert	316:19	13:24
8:20 13:2	383:16	55:24 61:2	deal 123:13	defendants
data 21:14	386:21	David	233:21	15:18
22:13 24:4	400:13	149:24	dealing	323:16
85:20	402:8	DAVIS 5:7	187:21	324:3
102:9	411:15	davis@coope	DEAN 8:6	defending
121:19	412:17	rlawpartners	DEANNA	14:23
128:18	413:12	.com 5:7	5:20	288:1, 9
141:4	416:5, 10, 12	day 75:17,	debate	defense
159:17	418:1, 6	18 95:17	416:13	310:18
164:14, 16,	423:14	97:5 100:4	December	defensive
25 165:11	424:12	102:7, 16	293:11	103:22
166:23	433:7	113:16, 19	294:1	104:11
167:14	440:9, 10	222:22	435:16, 17	defer 448:6
180:23	442:5, 8	226:18	decide	deferred
181:18	444:6	228:19, 25	79:18	427:22
185:2	450:16	229:6	181:5 436:6	deficit 11:3
193:5	466:16	285:11	decided	defined
195:10, 15	468:21	300:9, 12, 13	26:15	193:7
196:21	470:19, 22	301:13	56:23	Definitely
202:13	485:9	304:16	117:20	62:7 95:24
203:9	database	349:8	224:18	223:23
218:8	217:5	351:21	310:1	269:12
221:16	370:15	352:6, 7, 8	408:23	287:15
223:24	383:18	353:14	deciding	297:5
224:3, 12, 14,	412:3	441:11	449:4	315:16
19 250:8, 10	Databases	490:16	decision	322:8
251:25	49:6	days 94:4,	69:16	378:24
255:19	date 1:15	11, 13, 20	174:14	397:7
256:14	12:17 13:5	101:15	deck 226:3	445:15
259:10	40:7 54:23	156:13	declaration	degree
260:18	71:6	191:23	434:23	297:5
270:2	144:23	223:7	decrease	427:14
279:8	387:8, 11	248:17	485:18, 24	

delete	395:16	145:7	detail	418:21
299:25	396:9, 18, 22	188:15	167:20	473:17
deleted	397:2, 9, 24	281:18	232:5	develop
413:4	398:9	284:10, 20	241:24	41:20, 21
delivered	399:4	306:7	242:14	153:18
158:21	400:1	315:1	405:4	
203:23	401:4	346:22	detailed	Development
deliveries	402:13	487:22	100:14	9:14, 22
160:21	462:13	489:3, 12, 16,	257:25	265:10
delivery	DELUCIA	17	details	422:1
152:23	3:11	depositions	35:25	development
153:17	DENISE 1:5	27:3 108:18	61:15 85:5,	al 11:23
158:3, 14, 23	Denmark	depression	7 453:9	95:24
159:4, 11	17:9	241:11, 14,	detect	devil's 39:4
164:18	department	15, 21 242:2,	198:4	303:12
165:4, 7	81:16	18 243:5, 21,	376:24	diabetes
166:11, 17	465:17	23 437:22	detectable	422:4
167:8	depending	443:19	195:19	423:17
168:4, 24	93:5 314:4	deps@golko	196:15, 23	diagnosed
191:23	417:8	w.com 1:23	200:6	41:23
194:14	depends	derives	340:24	42:25 43:1,
195:4, 8, 21	136:10	415:16	detected	3, 19 125:15
196:9	156:1	describe	191:24	diagnoses
203:18	204:12, 13	117:18	357:5	346:3
204:1	213:21	described	377:23	378:11
209:3, 5	216:15	73:10	378:7	379:15
210:11	288:14	describes	379:17	380:16
224:5, 9	depon	129:4	detection	381:3
226:9, 13, 18	281:18	describing	197:3, 7, 9	diagnosis
227:4, 9, 12,	deponent	50:8	198:2	42:3, 11, 22
16, 19, 22	13:12 490:1	Description	200:14	43:6, 25
228:19	DEPONENT	9:10	363:17	357:16, 19
229:1, 749	design	determinatio	363:21
255:17	0 12:20	403:4, 19	n 231:18	445:21, 22
256:6, 9, 10,	deposes	433:13	323:4	450:14
11, 19 257:9,	13:23	464:9	391:4	differ
15, 23 258:2,	deposing	designs	419:3, 5, 18,	433:20
6, 7, 12, 19,	489:14	432:14	25	difference
21, 25	deposition	desire	determine	41:16 48:5
259:17	1:11 12:12,	360:24	230:2	110:22
260:2, 8, 10,	15 13:7	despite	248:9	150:25
17 300:14,	25:16 27:2	260:2	269:13	167:7
16 366:20	31:5 34:24	359:15	determined	219:10
367:4, 17	79:11	429:17	335:10	271:19

358:5	327:15	460:17	disciplines	210:20
363:15	346:3	485:16	446:11	223:11
367:10	352:25	directions	disclose	230:19, 25
380:21, 25	369:20	485:23	77:13 88:4,	310:13
440:6	378:23	directly	17 138:13,	315:10
456:7	382:1	154:2	15 140:9, 10,	320:14
457:14	392:7, 8	207:2	12 175:24	335:18, 22
474:7 479:1	411:4, 12	233:21	294:21, 25	337:21
differences	418:18	260:14	435:8	338:8, 22
193:7	421:25	265:17	436:1	346:8, 18
234:14	424:24	372:5	437:4, 8	367:22
280:9	429:10	director	disclosed	404:9
308:4 457:9	438:24	429:10, 11	55:22, 25	405:3, 14, 16
different	440:1	dis 49:8	138:20	407:4 413:1
17:12 44:4	442:21	141:2	140:23, 24	discussed
56:20	446:13	disagree	282:25	26:15
71:23 77:4	447:2	141:7	283:1	70:22, 23
93:6 95:1,	456:19	142:4, 17	315:13	102:10
13 110:25	475:4, 20	263:11, 14	334:15, 16	117:12, 14
125:5, 15, 21,	477:20	293:12	disclosing	256:3, 4, 14
22 126:4	difficult	309:18	306:23	281:11
128:14	118:3	310:10	315:11, 12	356:16
156:7	432:15	315:9	335:19	386:7, 8
160:11	difficulties	320:23	disclosure	discusses
162:13, 14,	459:22	381:1	56:17, 24	252:9
17 163:21,	diligence	431:2, 24	435:16	discussing
24 183:17	143:24	432:1	436:20	28:4 209:7
187:18	436:15	433:24	disclosures	243:2
200:19	diligently	434:6	435:1	346:20
202:11	47:8	466:5	discordant	415:10
210:24	diluting	476:15	265:3	423:23
221:6	395:23	disagreed	276:22	discussion
239:19	Diplomate	249:10, 14	discovered	77:19 98:7
243:13	1:16 488:2,	disagreeing	307:5	213:7
246:14	17	236:11		223:18
265:17	DIRECT		discrepancies	255:13
266:1, 13, 14	14:1 15:2	disagreement	72:1	257:25
267:7	298:25	141:5	discuss 33:6	264:18
275:25	360:21	disagrees	49:13, 25	403:22
287:19	directed	142:11	70:6 74:23	422:6
296:1	373:4	disappear	81:21	disease
304:6	direction	460:12	99:25	126:2, 3
320:11	247:25	discarded	167:11, 19,	162:5
326:12		269:20	20 207:20	

239:10	diverse	213:9	412:20	382:5
419:13	388:19	226:7	417:25	388:15
diseases	421:17	231:12	420:22	documentati
125:14	divide	239:12	421:21	on 77:22
267:8	362:18	251:4	426:21	118:22
dismissing	Division	256:2	428:9	314:22
207:25	407:25	258:10	430:12	315:4
Disorder	dlee@btlaw.c	263:10	437:14	documented
10:14, 15, 19,	om 5:21	264:10, 20	438:19	328:16
23 11:7, 15	DNA 412:12	268:10	442:14	335:14
206:1 431:1	DNBC	271:21	443:24	384:5
Disorders	99:11	283:20	444:10	482:10
10:13 12:9	100:21	285:3	446:21	
51:6 96:16	375:1	290:2	450:24	documenting
109:13	416:11	294:1	451:1, 24	305:2
148:14	docket 27:2	295:25	457:15	documents
227:1	Doctor 14:3	296:12	458:4	176:14
263:19	27:24 51:8	304:1	459:19	323:15
265:11	56:22	327:24	462:9	324:2, 3
273:10	84:20	328:19	469:19	doing 22:1
298:24	107:18	331:22	470:4	25:20 27:8
397:22	113:15	333:20	472:16	41:5 47:25
398:19	126:7	335:24	473:9	79:25 82:9,
415:6	127:8, 9	336:3	474:13	19, 22 97:21
422:9	128:9	339:24	doctoral	113:11
437:24	131:7, 15, 24	342:4, 21	41:2, 3	127:24
471:11	133:11	344:3	doctorate	143:3, 19, 24
476:8	139:14	345:8	90:23	144:3
dissect	168:22	346:10, 23	doctors	156:12
196:5	172:16	347:22	62:4 81:7,	179:8
disser 449:7	173:11	348:9	25 84:23	222:18
dissertation	174:24	354:18	121:3	242:22
41:5	175:15	355:13, 25	429:4	259:3
372:23	176:4	358:10	449:16	281:20
427:1, 6, 25	177:16	368:13	DOCUMEN	311:19
448:24	182:23	370:7, 20	T 1:5 10:7	325:2
449:8, 10	184:5	374:20	27:1	326:11
distant	185:3	378:4	306:17	330:10
206:13	186:15, 25	380:11	307:21	332:21
distinction	187:24	384:11	310:16	334:10
140:14	188:13	387:22	315:4	350:25
DISTRICT	200:2	394:4	326:1, 16, 18	402:5
1:1	203:11	396:5, 12, 24	381:23	459:25
dive 45:19	211:21	407:23		489:8

Dollar 6:22, 23 7:21	doubters 39:2	14, 16, 24 69:3, 4, 23	22 147:18 148:23	249:9 250:16, 23
dosage 459:22 461:3	DOVEL 4:12, 14	70:3, 10, 15 71:1, 2, 17	149:2, 4 151:17, 25	251:10 252:1
dose 161:18 180:12, 15, 17, 18, 20 181:24 182:13 183:5 184:2, 12 186:1 188:4 191:24 192:25 195:22 196:14 197:18, 21 200:5, 10, 11 248:15, 20, 21 250:5, 10 325:23 431:14 459:23 460:5	DOWD 4:8 Dr 10:4 12:12 14:7, 8 15:8, 12, 16, 19 17:15, 16 18:22 19:19 20:5 22:24 23:19 24:15, 16, 23, 25 25:1, 2, 8 27:21 28:3, 4, 12 29:8 31:4, 9, 13, 15, 19, 24 32:2, 13, 16, 22 33:3, 4, 5, 7, 15, 19, 22, 25 34:4, 8, 24 35:10, 17 36:6, 8, 21, 22 38:11 39:11, 21 41:10 42:1, 2, 10, 17, 20, 21 43:5 44:2, 3, 4, 9, 20 45:10 46:11 49:3, 16 50:5 51:25 53:17, 24 54:5, 6, 17, 20, 22 55:18 57:3, 13 59:18 60:5, 17 61:20 64:17 65:12, 23 67:8 68:12,	73:9, 11, 15 74:2 75:4, 5, 23 76:17, 18, 20 77:7, 14 78:16 80:6, 10 81:8, 9, 13, 14, 23 82:18, 24 83:3, 5, 15, 23 84:2, 3, 21 85:21 87:21 90:7, 19 91:20 92:18 94:3, 17 97:3, 4, 11 98:1, 9 99:9 100:2, 9, 19 103:21 104:4, 21 106:24 107:5 108:6, 14 112:6 114:7, 13 115:5 116:1, 13 117:2, 19, 20, 25 119:5, 10 120:7, 9, 11 122:5 127:10 134:4, 7, 20 136:5 137:3, 6 138:1, 6 139:24 140:17 143:16 144:16 145:8, 15, 18,	152:12 157:15 158:1, 12 159:9 162:7 165:17 170:2 174:14 177:20 191:2, 5 192:4 193:12 196:10 197:20 201:10, 16 203:15 206:10, 24 209:8 210:8 214:4, 22 219:19 221:17 222:16 223:6 224:23 226:16 227:8 228:10, 17 229:20, 25 231:16 232:23 233:25 235:15, 21 237:5, 18 238:22, 24 240:7 241:5, 10 242:6 244:13 246:5	254:16 257:13 260:1, 8, 14 261:3 267:21 270:15 274:1 275:8 281:9 284:2 286:24 289:7 290:18 292:6 293:2 297:17 302:6 307:4 308:14 312:25 313:7, 22 316:6, 10, 11, 21, 22, 23, 24 317:3, 5, 6, 8, 20 318:5, 6 319:23 320:6 321:10 324:16, 17 326:20 327:8 330:14 332:13, 20 335:8 347:13 349:11 350:19 355:14, 15, 18, 20 356:3 365:3, 22

366:20	478:19	162:22	318:8	editors
367:16	483:3, 7, 8,	163:1	340:19	175:24, 25
368:4	23, 25	183:11	359:25	177:3
373:24	484:23	218:17	394:6, 11	educated
374:3	Draft 9:19	220:18, 19,	396:24	121:2
377:11, 12	11:2, 5	20 259:7, 10,	405:25	303:18
379:18, 21	246:12	20 353:16	426:23	education
380:15	248:5	402:25	445:9	369:12
383:2	252:14	DSM-5	452:14	401:14
386:18, 19	297:21	125:15	483:7	effect 62:2
390:8	298:5	dsullivan@hs	early 34:25	103:11
392:12	374:12, 15	gllp.com	42:25 44:1	130:14
398:7	380:17	3:12	60:22	137:8
401:10	384:12	DUANE	232:12	153:23
404:23, 24	388:16	7:18	easier 84:20	199:17
405:22	drafters	due 143:24	317:16	216:13
406:2, 24	335:8	195:8	324:13	227:15
407:8	drafting	237:12	376:24	234:25
408:24	354:20	273:24	easily	235:4
410:21, 25	draw 83:13	365:14	283:23	267:14, 16
413:3	126:13	396:8	East 1:13	278:5
415:8, 11, 14	drawing	410:15	2:23 5:16	322:16
416:8	408:21	412:16	6:2 13:8	325:23
418:1	drink	436:14	Eastern	382:22
419:16	465:14	duly 13:21	1:15 10:7,	387:18
420:4, 9, 10	drinks	488:4	10 295:22	389:13, 14
423:6	82:12	duration	easy 452:7	399:23
425:22	drive 221:9	191:22	466:18	413:13
428:23	driven 24:3,	dynamics	ecanaan@ksl	432:7
434:17	6 208:24	35:8	aw.com 7:2	456:15
435:3, 22	drop	< E >	eclampsia	485:18
436:9, 11	413:13	e2 372:2	423:17	486:14
437:7, 9	414:8	eager	Economic	effective
445:6	drug 19:16	212:17	11:11	460:5
447:10	99:6 121:5	earlier	edelucia@hs	effects
448:13	155:22, 24	110:7	gllp.com	18:12
464:10	156:17	119:16	3:11	90:25
465:7, 14, 19,	258:16	155:25	edit 297:25	105:12
20, 23	259:13	194:20	edited	121:9
466:10	322:1	206:13	297:7 386:5	253:12
467:14	375:2, 19	288:20	editor	298:25
469:10	398:21	295:1	175:21	299:1
470:17, 20	Drugs	298:17		439:16
471:6	130:21			

459:21	150:14	endocannabi	357:10	epidemiologi
effort 61:3	175:7	noid 105:11	358:24	es 149:25
eight	178:25	endocrine	365:12	epidemiologi
304:19, 21	405:3	105:12	395:20	st 18:11
403:22	406:1, 5	endpoints	397:16	19:3 68:19
eighth	413:2	213:19	456:13	132:22
155:14	416:7	ends 110:13	457:13	174:7
EILEEN	418:3	111:18	460:13	203:5
3:11	419:4	162:18	484:18	304:23
either 71:16	470:5, 6, 10,	163:25	entirely	355:18
168:3	11 484:15	179:18	47:3 61:7	360:18
247:25	E-mail(s)	391:20	120:22	473:25
292:12	9:11, 16	engagement	205:8	epidemiologi
326:8	11:17 12:4	309:4	240:3	sts 63:21
345:19	e-mailed	England	369:16	83:16, 22
468:15	420:4	212:21	396:10	334:18
487:14	e-mails	213:4	entirety	363:9
elaborate	75:17	enhance	132:18, 19	392:13, 17,
289:8	175:4	315:2, 3	133:2	19, 22
290:19, 24	448:14	enrolled	344:12	
elements	emarlowe@c	462:10, 12	entitled	epidemiology
320:7	arlsonattorne	enter 105:5	26:16 67:1	61:24
elephant	ys.com 3:23	entire 49:5	181:4, 5	132:20
73:1	embryo	91:15 92:3,	186:17	133:7
eligible	91:12 96:21	4 93:3, 8	environment	134:13, 16
350:6	EMILY	102:16	197:11	135:21, 25
eliminated	3:23	105:18, 22	environment	137:6, 12
334:23	emotion	107:16	al 66:23	150:3
ELLIS 6:19	178:18, 23	121:1	92:10	174:9
Elsbeth	emotional	129:6	240:4	203:6
110:1	178:24	133:2	332:7	211:17
111:20	emphasized	157:11	403:7 404:5	212:16
else's 81:2,	109:10	211:8	EPA 83:12	254:13
6 85:8	employed	219:20	117:15	288:16
324:6, 13	143:15, 18,	248:21	307:14, 16	331:12, 23,
e-mail	21	264:2	316:17	24, 25
38:21	employee	269:10	epi 446:1, 5	355:20
67:21 69:3	488:10, 12	275:6	447:13	363:5
74:21 75:6,	encompasses	290:8, 9	449:13	365:9
24 77:21	269:5	300:15	474:9	366:4
109:25	encouraged	312:3, 8	epidemiologi	399:11
110:14	57:12	320:24	c 270:18	407:25
144:18, 20,	ended 485:6	344:25	epidemiologi	408:2, 4
21, 24		345:23	cal 268:2	445:14

446:25	328:10, 14	evaluate	186:7	142:1, 20
474:1	473:24	141:3, 4	199:5	158:24
epigenetic	474:3, 4	213:15	235:10	201:12
66:20	establish	459:21	237:8	202:7
105:12	130:18	evaluated	240:14, 22	208:22
412:1	133:12	141:14	243:1, 12, 17	239:17
epigenetics	134:3	307:2	253:19	248:16
66:19 447:7	137:7	456:9	254:4, 8, 14	249:17
equally	345:11	467:16	271:10	277:19
155:13	established	468:8	272:17, 25	286:14
equals	133:7	EVAN 2:20	273:24	289:11
368:16	136:6	evan.janush	282:22	308:6
errata	171:17	@lanierlawfi	304:19, 21	309:9, 18
489:6, 9, 11,	230:12, 16	rm.com	320:2, 16	310:4, 10
14 490:7	268:5	2:21	325:22	311:19
491:1	270:21	eve 406:12	329:5	312:12
ERRATA.....	establishes	event	361:3, 14	324:10
.....	129:9	238:13	376:8	335:4, 21
.....491	136:15	eventually	386:16	339:21
12:21	estimate	57:23	392:8	348:21
error	120:10	343:4	406:18	350:18
369:16	376:5	376:11	416:1, 15	355:11
413:3	472:8	ever-	426:15, 19	367:8
errors 370:6	487:11	exposed	429:18	375:15
es 366:13	estimates	457:21	430:22	409:25
especially	211:5, 15	everyone's	434:10	419:7
36:19	474:18, 25	143:12, 13	456:14	440:7
41:21	et 9:15, 19	evidence	459:11	449:17
47:22	10:7, 20, 24	23:10 24:9	464:24	452:15
63:24 68:3	11:16, 21, 24	50:1 92:4	470:11	453:6
72:2, 19	12:3, 7, 10	94:10 96:8	471:3	457:4
160:20	40:13	105:20	481:6, 10	461:20
223:25	325:19, 24	109:11	evidently	Examination
243:5	361:16, 17	120:3, 5	300:20	12:1 14:1
277:10	362:6	128:23, 24	exact 91:4	15:2, 3
305:2	371:18	131:4	439:24	22:3, 7
404:20	391:16	132:19	440:16	25:22
455:9	394:17	136:22	441:11	35:10
460:20	etiology	141:5, 6, 19	469:12	135:2
471:4	125:19	143:7, 9, 11	exactly	173:15
essentially	European	144:2	38:25 39:2	483:5 488:4
307:24	412:3	182:14	77:2, 5, 6	EXAMINAT
326:4	EVA 7:1	183:11	101:9	IONS 9:4
327:19		185:10	113:16	

examined	exclusions	374:16, 20	expanded	355:15
169:2	383:22	380:17	328:16	393:11, 12
299:18	executive	383:2	386:21	401:22
432:4	129:25	384:8, 12	expect	406:13
example	Exhibit	389:16	216:5	445:10, 13,
66:13	108:9, 13, 16	390:13	251:17	25 446:5
94:25	109:6	394:1, 3, 7	331:7	expertise
125:25	144:13	405:19, 24	358:25	18:19 95:8
232:11	169:22	420:19, 24,	359:2	355:16
254:13	170:4	25 428:5, 11	377:6	445:21
331:12	174:21	438:9	429:3	446:9
353:19	175:1	442:15	433:8, 15	447:12, 23
394:20	176:5, 10, 14	443:2	435:6	449:13
455:15	191:6	448:8, 12, 14	436:1	experts
exceeded	213:25	450:21, 25	455:14	31:6 34:11,
56:25	214:6, 23	451:2	expected	12 115:3
excellent	222:20	459:1	121:16	148:9
390:22	245:20, 24	467:20	218:14	320:11
exchange	246:3, 7	468:4	251:22	expires
67:21	253:2	469:12	263:2	490:17
74:21 75:6,	254:23	471:7	314:20	explain
24 77:22	255:10	EXHIBITS	358:8, 21, 23	72:10
285:6	260:21	9:9 12:15,	479:20	74:23
404:24	268:7	16 108:17	482:24	86:23
406:1, 6	276:2	289:17	expecting	104:12
exclude	278:9	393:22	453:5	110:22
210:12	283:24	444:18	experience	113:7
227:18	284:3	487:23	95:12	116:9
231:6	289:24	exist 14:20	experienced	171:4
243:24	290:3, 21	185:6	448:7 450:7	179:1
257:7	291:4, 5	186:25	experiment	319:5
403:5	293:18, 19,	275:24	85:14	337:10
404:3, 13	22 296:9, 13	410:12	Expert	355:11
excluded	297:12, 16,	441:18, 23	10:15 27:3	393:10
158:21, 23	19, 22	existed	32:14	408:8
159:4	347:10, 15	117:8 331:1	58:22, 23	411:19
209:18	348:4, 8	existence	80:17	432:9 466:2
210:10	352:18	72:8 308:1	88:19	explained
256:23	354:12, 19	361:16	108:17	282:18, 24
excluding	355:5	exists 107:8	149:3	302:9
159:10	365:5	185:5	207:7, 12	431:14
exclusionary	367:23	188:3	284:19	explaining
384:3	368:3, 5	263:8	320:10	280:3
	371:17	479:25	349:12	

explanation	103:24	249:20, 22	206:13	fact 21:14
73:21	104:22	250:2, 6, 12	209:23	23:24
118:18	106:25	253:12	213:23	49:21
253:18	117:21	265:7	215:2	103:6, 10
405:11	119:6	269:16	231:22	153:11
431:13	120:13	272:19	243:15, 21,	158:17
exposed	123:1	273:1	22 244:1	161:17
103:17	124:10	277:10	277:18	176:19
152:21	127:14	295:21	332:7	207:15
183:12	128:9	301:1, 21	express	212:21
192:11	129:10	302:19	292:12, 14	256:20
202:21	132:8	303:10	expressed	279:9
208:8, 12	137:8	305:24	292:7	297:24
219:3	152:20	325:17	311:18	302:15
248:11	153:13	337:15	expressing	361:1
362:16, 19	154:15, 23	340:20	195:17	371:22
365:11	155:1, 3, 10,	341:1, 3, 8	expression	400:18
376:16	11, 14, 19, 22,	358:20	11:22	451:10
395:3, 23	24 156:2	360:22	extensive	factor
399:14	157:4, 12, 14,	376:6, 24	230:23	231:10
400:9	16 159:23	395:19	447:1	240:4
486:18	160:10	397:1	extensively	398:1
Exposure	164:10	398:8	19:1 230:4	409:19
9:18 10:4,	165:3	399:4	extent	factors
9, 17, 21	166:10, 16	420:12	39:20	231:10
11:14, 19, 24	167:3, 8, 9	421:15	55:19	233:8, 10, 23
17:18 18:2	168:3, 11, 24	423:8	282:22	243:9, 14
19:9, 25	169:13	424:6	extra	299:2
21:15 28:6,	183:15	429:19	354:19	403:7
14 35:11	192:25	430:24	380:16	404:5
36:10	196:3	441:1	383:10	409:18
39:24 45:6	199:9	452:5, 17, 22	485:5	410:7, 8
48:24 50:9,	205:10, 14,	453:2	extraction	432:8 466:1
21 58:7, 18	15, 19, 22, 23,	454:20	390:19	faculty
80:12	24 206:5, 6,	463:24	extramural	70:23
91:21 92:7	11, 17 208:6	475:7	56:5	fail 489:17
94:2, 3, 20	209:9, 19, 25	481:2 484:8	extremely	fair 120:15
95:5, 9, 17,	210:2, 4, 5	exposures	342:8	194:16
23, 25 96:1	215:1	62:3 66:23	eyes 46:3	289:23
97:5 98:13	230:8	92:11, 20	478:3	faith 14:21
99:6	231:19	94:11		461:6
100:12	243:25	157:18, 21	< F >	false 29:7
101:3	247:17, 21	163:7	F51 449:6	221:15
102:14	248:9	185:12, 16	face 83:13	244:7

262:10	333:16	17 237:5, 12,	148:19	finish 228:4
277:25	442:13	13, 15, 23	160:16	331:6
279:19	fees 356:4,	fever-	163:1, 2, 3	finished
377:8	12	reducers	197:14	59:4 351:1,
395:10, 12	felt 248:4	121:8	199:2	2 418:24
433:14, 15	276:7	fever-	215:20	419:24
479:2, 3, 12,	female	reducing	271:10	finishing
13, 14	368:23	234:25	272:17, 25	65:14
familial	females	235:1	273:3	fire 141:11
432:5, 7	454:8	field 68:19	281:21	407:10
familiar	455:16	fifth 370:11	300:7	409:16
164:8	457:23	fighting	306:12	Firm 1:13
204:4	458:14	359:24	320:21	2:20 3:21
213:2	459:9	figure	329:9	4:8 86:4, 8,
303:21	fetal 105:5	144:16	347:23	25 294:3, 13,
Family 6:23	130:22	419:7	379:8	18, 22
84:6, 13	186:2	file 119:1	399:18	firms 115:6
112:18	192:16	filed 14:17	434:16	first 13:21
432:6	269:16	56:1	440:12	17:17 18:1
Fantastic	298:23	393:12	486:12	23:24 35:6
180:3 336:2	360:21	435:17, 18	finding	40:24 45:5,
far 72:9	361:23	filtering	103:3, 11	11 52:2
75:4 81:19	fetus 91:4,	229:6	216:4	56:15
123:9	14 92:9, 25	final 223:17	findings	68:25 72:4,
129:9	93:4 96:22	269:2, 4	130:7, 13	5, 7 73:10
130:23	156:20	272:2, 7	268:2	99:20
164:22	192:16	380:18	270:18	102:1
218:7	198:16, 19,	419:2, 3, 5	388:21	105:4
280:7	20, 24	finally	finds	106:4
283:15	199:16	317:15	286:10	108:13
469:23	200:21	finance	410:21	113:20
474:24	201:15	437:4	fine 15:7	114:3
faster 51:11	202:9	financial	20:23	117:19
FDA 323:3,	226:15	85:23 88:2	21:23	139:25
13, 22 324:2,	248:10	294:3, 22	27:16	144:17, 19,
8 407:12	301:1, 21	436:20	38:10	23 145:7, 25
feeding	447:3, 8	financially	121:5, 11	149:5
372:9	fetuses	488:12	124:19	151:2
feel 127:23	154:7	find 16:23	173:2, 11	152:5, 10, 14
166:25	fever 234:1,	17:12	232:19	162:24
172:18	3, 7, 17, 19,	20:19, 20	266:7	170:15
178:12	21 235:6, 11,	24:2 47:10	289:22	189:7
179:7	22 236:6, 11,	99:19	477:4, 16	204:11, 16
218:1		121:16, 17	478:6	207:3

234:18	221:14, 18,	339:13	93:17 94:6,	169:5
262:3	21 222:1, 6,	344:14	22 95:20	172:19
272:1, 7	17 223:1	351:16	97:9, 13	178:16
274:2, 4	226:12	383:17	98:3 100:8	180:8
297:1, 25	240:5	461:10, 24	101:5, 20	182:3
300:23	248:15	462:1	104:3, 8	183:8
301:7	270:1	471:24, 25	107:4	184:9
302:4	300:9	Food 322:1	109:3	185:8
304:10, 12	459:16	foregoing	110:20	187:7, 8
305:10	461:4, 10	488:7 490:4	112:9	188:8
309:8, 20	flattering	forensic	113:5	192:11
310:2, 21	332:18	97:21	114:25	200:1
316:11, 20,	flip 465:2	for-ever	116:7, 15	207:10
25 321:24	Floor 2:23	472:6	117:6, 24	209:11
324:25	6:8 8:12	forget 75:19	119:9	211:23
330:1, 15	143:9	forgetting	120:17, 23	226:20
333:8	Florida 5:8	75:16 81:21	123:4	236:16
338:11	Flower 8:12	forgive	124:13	238:2, 10, 17
368:12	fluid 156:19	75:20	125:8	243:10
374:25	focus 93:20	forgot 40:14	126:17	244:17
375:24	96:25	form 18:21	127:17	245:1, 9
396:8	211:5	20:4 21:18	128:11	252:6
399:3	386:11, 12	24:14	129:14	255:2
413:3	475:17	25:10	131:12, 17	257:16
421:13	focused	27:12 32:4,	132:11	270:24
432:20	211:8, 9	8 35:16	133:15, 23	274:6, 20
445:16	FOERSTER	40:2 42:6,	134:6, 23	276:15
459:20	7:12	16 44:6	135:4, 9, 10,	277:1
460:2	follow	45:9 46:16	18 136:9	278:13
475:8, 10	27:12	49:2 50:11	137:10	280:5
five 42:25	102:9	52:6, 20	138:4	281:8
70:8	327:13	54:25 55:9,	139:4	282:14
152:22, 23	376:3	17 57:20	140:6	291:15
153:1, 13	436:20	58:10	142:7, 14	292:10
157:11, 12,	470:3	59:11, 22	144:8	305:15
14 167:3	following	61:5 64:9	148:1	307:9
168:10	11:23	73:13 74:6	149:15	308:17
169:12	191:20	75:10 76:8	158:6	311:6
185:17	350:21	77:11	160:1, 14	318:10, 18
206:18	follows	78:22 80:2	163:11	319:14
217:4, 5	13:25	84:10	164:4	321:12
218:12, 15	follow-up	87:16 88:8	165:22	322:13
219:1, 2, 9	41:19	89:6 90:10	166:6, 21	328:4, 23
220:9	44:11	91:8, 24	168:6	329:18

332:23	444:1	40:5 52:12	FOX 2:13	full 130:16
334:5	446:7, 19	96:19	frankly 26:2	386:15
335:12	447:15	118:23	free 143:19	421:13
336:23	455:22	119:2	172:18	fully 41:25
337:17	458:2, 12	148:17	frequency	189:19
338:5, 14, 20	466:7	160:21	191:22	299:3
339:4, 18	469:14, 17	164:21	fresh 60:9	function
340:11, 22	470:8	193:8, 9	Friday	12:7 358:7
341:14, 22	472:12	196:22	14:10	funding
344:10	474:15	215:5, 14, 15	friend	44:15
345:16	475:22	267:14, 15	465:6, 8	354:20
358:13	480:5	280:3	friendly	funds 86:25
360:2, 5	481:4, 22	284:24	68:15, 17, 23	87:1
366:23	482:17	285:2	465:12	further
370:24	490:6	286:19	friends 84:7,	483:4
371:2, 8	formal	392:9	13	487:17
378:20	236:1	399:20, 21	front 29:12,	488:5, 10
381:7	240:18	418:19	18, 22 30:2	
383:5, 14	242:22	420:3, 5, 6	36:23	Furthermore
384:22	formally	421:16	108:15, 21	432:3
385:22	68:10 408:3	432:6	131:8	future
387:24	format	437:19	170:3	205:22
397:6	247:2	457:22	174:25	270:5
398:12	296:1 353:1	485:6, 8	176:4	402:6
399:8	formats	foundation	191:6	407:4
401:19	352:25	424:2	214:5	461:2
404:7	former	four 17:3	246:6	463:12, 15,
408:12, 15	112:17	37:18	284:5	18
411:10	formulate	237:22	290:2	
414:24	85:9	240:6	296:13	< G >
418:23	formulated	277:8	297:18	Garcia
419:22	83:19	317:9, 12	346:15	110:2, 5, 8
422:12	formulating	336:25	347:14	112:3 460:8
424:17	78:18	359:9, 10	390:13	GARDAR
426:8	formulation	361:2	394:5	8:1
429:24	217:22	437:22	405:23	Gareri
431:6	formulations	443:20	420:23	302:23, 24
434:4	111:5, 7	461:4, 10	428:10	gel 156:9
435:11	forth 488:8	fourth	442:19	gender
436:3, 24	forward	365:17	451:1 468:3	456:11
438:3	14:23	368:9	frontal 11:7	gene 11:22
439:2	181:6, 8	370:7, 11	Frontopariet	239:15
440:18, 22	found 16:17	403:16	al 10:19, 23	General
442:6, 17	25:2 28:12			7:21 93:2,

7 192:10	416:4, 5, 12,	220:5	309:13	giving
201:3	19 417:16	221:5	310:22	212:10
213:14	431:22	257:21	312:19	288:2
220:17	434:7, 11	337:23, 24,	320:18	glimpse
223:10	444:12	25 338:11,	323:10	35:5
241:14	446:25	16 339:9, 25	339:24	go 16:13
264:17	464:13, 14	340:5, 9	342:4, 6	24:17 38:6
271:7	466:1	344:4	365:2	43:1, 2
272:23	468:13	346:21	382:9, 12	51:11
275:12	469:7	378:18	392:8	54:16
305:19	470:23, 25	G-E-S-T-E	405:17	59:22
312:1	genetics	151:6	477:11	61:14 63:3
439:23	67:22	getting	485:16, 22	71:14 74:8
	125:17	209:6	given 22:8	78:25
generalizable	239:6, 8	219:11	87:25	90:18 99:8
411:15	404:15, 16	246:20	99:10	107:20
generally	405:1, 11, 12,	259:2	154:23, 25	116:11, 18
32:17, 21	15 406:19	362:12	188:4	156:19
336:11, 12	407:11, 19,	365:16	189:17	157:3
338:11	20, 23	372:12, 14	204:5, 7	169:6
460:7	409:12, 23	374:12	205:2	173:9, 18
479:17	410:13, 22	418:1	208:3	174:15
genes 410:3,	412:14, 15	427:14	220:11	187:10
6, 15, 19	415:11, 13,	girls 456:19	225:19	190:11, 13
412:8, 9, 11,	14 417:21,	457:14	227:16, 22	196:4
12, 24	24 418:20	give 19:16	257:9	197:12
415:19, 21	419:6, 8	50:14 57:8	258:16	203:12
416:1, 17	432:8	66:13	259:11, 13	205:5
417:1, 8, 13,	464:23, 24	67:11 68:4	365:12	214:16
15 419:10,	466:13, 15,	78:5 99:25	386:23	228:5
11 447:7	17 468:18	116:22	401:11	238:13
466:19, 20	geological	120:25	490:5	245:12
468:22	156:25	122:8	gives	262:18
469:8 471:4	Gervin	125:25	157:11	263:5, 11
genetic	291:12	139:13	161:19	283:22
125:11	gestational	146:5	245:5	285:13
239:12, 14,	422:3, 4	177:17	248:14	291:2
17 403:6	423:3, 17	210:19	249:20	308:25
405:6, 8	425:15	220:19	250:9	311:11
408:2, 3	GESTE	225:21	305:4	313:24
409:17	9:14 44:21	233:14	309:16	335:25
410:15	151:6, 8, 9,	241:7	310:3	342:24
413:10, 12	10, 13	250:11	381:11	365:9
414:6	219:21	296:7	454:19	369:12

418:20	200:2	GOLKOW	118:11	ground
429:5	210:22	1:21 8:21	121:22	187:10
433:10	225:21	13:4	gram	group
449:4, 22	228:13	Good 14:3,	196:16	64:24 65:3
472:20	231:16	4, 7, 21	197:24	81:8, 14
478:9	246:2	15:16	200:7	82:22 88:2
483:12, 13	260:21, 25	64:11 91:2	201:8, 23	114:8
487:14	262:10	185:11	202:5	127:12
goes 38:12	263:3	193:11	363:11	211:19
130:23	284:13	231:14	Grand 3:18	218:9
156:21	289:14, 18	373:10	4:4	222:12, 14,
199:14, 15	293:10, 17	380:5	grant	18 223:3
213:11	296:5	436:9	448:25	295:6, 10
218:10	310:24	445:2	449:2, 4, 5,	297:3
247:24	313:19	461:6	23 450:3, 11,	336:4
382:6	325:3	470:18	18	339:15
391:19	335:25	goodness	granted	363:7, 24
466:2	336:3	144:4	103:7	365:18, 20
going 14:22	338:10	Google	grapes	395:3, 21
22:1, 2, 4, 10,	343:2, 6	281:22	172:15	400:9
19 25:13, 15,	346:25	284:24	173:11	429:3 433:7
24, 25 26:3,	354:15	285:3	Gray	grouping
16, 25 55:25	359:5	gotten	170:24	339:9
59:13 60:7,	364:4	41:25	171:3, 5, 7	groups
11, 18, 25	393:25	43:18	great 24:7,	362:16, 19
61:11	394:2	189:10	8 46:14	363:19
69:15, 25	431:25	418:13	70:18 96:4	364:1
78:15 79:3,	432:19	476:18	150:2	365:17
9 85:13, 16,	448:24	Gou 130:6	155:9	grow 206:22
17 87:2	449:3	government	163:6	GRUNER
102:4	450:4, 24	332:5, 12, 17	165:25	7:18
106:1, 11, 21	451:20	334:13	166:1	Guaynabo
108:12	477:24	grade	169:11	3:7
121:13	golafsson@s	135:24	199:5 289:1	GUERRA
138:7, 8, 13,	mithsovik.co	307:25	greater	3:1
15 139:17	m 8:2	308:4, 5, 8,	155:23	guess
141:16, 18,	gold 333:9	12 309:9, 25	165:7 482:6	112:15
20 144:16	GOLDBERG	313:25	Green	144:25
163:15	3:9	317:15	171:13	401:20
173:14	Golding	325:3	GREG 4:14	417:20
182:25	291:12	grading	greg@dovel.c	451:16
188:13, 24		481:6	om 4:14	guesses
190:16		gradually	grew 19:17	401:17
194:4, 22		46:25		

guide 130:22 183:15 304:4, 11, 13 305:1, 7, 9, 14, 18 306:1, 3, 24 307:5, 12, 15, 23 308:1, 5, 7, 11 309:3, 11, 15 310:2, 3, 12, 22 311:4, 16, 20, 22, 23 312:16 313:4, 8, 14, 24 314:7, 11, 15, 17 315:5, 18, 23 316:24 317:4, 13, 19, 22 318:23, 25 319:3, 7, 17, 19, 25 320:22 324:19, 24 325:5, 6, 9, 12, 25 326:11, 15, 17, 21 327:4, 6, 18, 19 328:2, 8, 13, 15, 21 329:1, 3, 15, 24 330:6, 16 332:3, 22 333:4, 22, 24 335:3, 4, 9, 17 337:4, 12 379:12 404:12 431:9 452:2 453:8 482:11	guided 207:21 guides 326:5 Gustavson 432:11, 20 433:7 gut 153:17 guts 156:21 guys 343:11, 15 gynecol 246:21 gynecology 62:6 64:3 119:25 171:24 172:18 174:16 176:17 246:21, 23 Gynecology's 175:17 < H > hac 14:17, 21 22:9 HAIGHT 8:11 HAILEY 3:4 half 179:19 300:13 329:4 354:2 408:1 484:25 half-life 353:18 hand 176:10, 14 480:2 hands 142:24	Hang 74:9 79:2 Hannah 20:11 21:3, 7, 9 23:25 28:4 36:8 41:10 175:18 178:3 179:2 222:21, 23 224:7 225:15, 16 249:11 258:2 Hannah's 245:15 happen 156:16 178:4 204:10 370:6 461:4 462:16 482:23 happened 115:20 250:12 272:14 370:4 384:7 463:19 487:7 happening 118:13 happens 82:11 92:7 156:8 157:6, 9 160:16 170:17 196:6 235:1	399:17 487:13 happily 283:23 happy 33:8 42:7 43:11 49:13, 25 57:7 59:20, 24 61:9 74:23 79:17 81:21 82:6 85:1 99:23, 25 100:23 106:15 113:8 124:2 128:3 139:6 164:5 165:15 167:12, 20 180:24 204:22 207:20 210:19 254:3, 18 282:9 315:9 320:14 335:17 337:18, 20 338:21 339:19 340:13 345:25 367:22 378:2 381:14 405:3, 16, 17 413:1 415:17 425:17	hard 196:13 287:17 457:5 harder 324:14 harm 271:11 272:18 273:1 hazard 474:25 HEACOX 2:21 head 445:3 headaches 234:25 400:4 Health 6:10 81:11 84:4 243:4 332:6 437:24 442:22 healthy 461:12 hear 42:7 46:12 86:9 90:15 148:6, 16 228:24 heard 174:1 hearing 61:2 86:5 heart 144:4 444:4 heavily 388:3 he'd 342:11 hedge 86:24 87:1 held 1:12 13:8 19:8 334:11
---	---	--	---	---

help 72:14	381:13	324:25	holding	256:11
91:2	410:14	325:7	176:9, 14	257:8, 14, 20
264:10	422:5	326:3, 4, 7,	253:3	258:9, 12
280:23	423:18	13, 21, 25	HOLLAND	259:13
323:19	425:12, 14	327:1, 7, 16,	4:8	366:22
331:14	442:20	20 328:2, 6,	Hollander	367:5
333:10	higher	9, 12, 17, 22	31:13, 19	hour 54:11,
440:12	195:9, 19, 22	329:1, 8, 16,	32:2 33:3,	12, 15 96:20
481:20	197:25	22, 25 330:3,	15, 25 42:2	102:18, 25
helped	198:9	15	Hollander's	203:12
224:19	202:9	Hills 8:8	31:9, 15	289:19
419:9 427:1	221:16	hire 69:13,	32:13, 16, 22	hourly
helpful	255:17	16 465:16	33:4, 5, 7, 19,	54:13, 15
138:2	266:25	hired 53:18	22 34:4	hours 37:19
306:16	267:1	54:2, 6	HOLWELL	55:2 88:13
315:13	333:16	58:8 89:1	3:9	102:24
331:5	358:3, 25	113:16	honest	189:1
361:12	359:3	144:17	45:25	203:17
419:8	376:15	307:6	72:16	204:11, 17,
464:19	396:4	hiring	84:14	25 205:3, 6
helping	409:17	57:15	118:3	207:3
114:23	416:19	465:18	207:13	208:7
194:12	417:21	hit 96:21	329:5	352:11, 12,
207:23	468:23	103:2	honestly	22 353:13,
helps 43:20	469:1, 3	hold 16:8	77:16	20, 21, 22, 23,
306:17	470:23, 25	42:16	110:10	24 394:15
386:17	highest	46:18	121:16	400:11
hereinbefore	177:7	51:13 52:5	139:11	403:22
488:8	334:12	74:5 90:12	205:11	476:24
heterogeneity	highlighting	101:21	331:18	House 11:10
476:11	375:6	105:25	353:14	housing
hide 81:22	highly	106:13	370:5	70:22
279:12	204:3	134:22	433:21	Houston
280:23	208:23	164:3	honesty	2:16
292:3	Highway	172:13	113:9	huge 86:22
hiding	3:24	187:2, 3, 4	hope 60:21	119:18
335:20	Hill 118:21	189:23, 24	142:22	153:8
high 170:19,	130:16, 17	255:1	429:6 437:7	221:8 321:4
23 171:22	132:24	270:23, 24	hopefully	human
172:2, 5	133:1	274:19	416:13	429:18
341:1	137:15	342:7	hoping	430:23
364:2, 7	209:14	397:5	72:14	hundreds
376:13	230:22	476:20	hospital	29:4 33:18
	320:23		204:13, 15	34:13

99:24	214:1	Illinois 1:17	361:18	included
168:12	245:25	2:11 488:19	390:20	49:12
HUNT 2:7	283:25	illness	397:14	158:19
54:3	289:25	413:14	410:13	276:13
hurt 481:19,	293:23	414:9, 15, 18,	412:15	329:23
23	296:10	19, 21 415:2,	417:14	400:9
hwatts@watt	297:13	19, 23 416:4	466:20	459:14, 16
sguerra.com	347:11	444:13	476:12	includes
3:4	348:5	imagine	Importantly	471:14
Hyperactivit	354:13	219:2	261:3, 17	472:23
y 10:14	367:24	impact	265:18	including
11:6, 15	374:17	447:8	impossible	50:22
417:1, 5, 6	384:9	imperative	174:4 384:5	55:23
hypothesis	393:23	489:13	impressed	95:13
130:8	405:20	implies	103:5	125:17
167:15	420:20	107:7	impressive	226:12
241:23	428:6	132:14	63:24	234:10
245:3	438:10	251:10	221:12	241:17
251:23	448:9	implying	394:25	265:11
286:5	450:22	156:11	399:16, 21	280:11
	467:21	178:1	433:6	306:15
< I >	487:24	important	improper	366:12
idea 54:7	identified	34:14 35:7	61:7	395:3
112:5, 11	52:17	59:6	improve	400:10
121:11	100:4	140:13	163:16, 17	431:14
193:10	107:8	161:8	improved	432:8
201:13	268:3	162:2	265:7	433:2 447:8
242:20	270:19	171:6	inaccurate	inclusion
360:8	411:7	180:25	260:3	384:4
373:11	419:16	182:5	261:6, 19	incomplete
401:13	identifies	185:5	262:9	166:24
409:17	374:25	186:9, 16	265:21	224:14
410:12	identify	189:20, 25	286:22, 23	325:18
ideas	50:19	198:14, 22	287:11	
306:11	103:23	199:19	366:14	inconsistency
320:20	104:22	200:18	375:3, 19	294:17
373:3, 8	106:25	210:15	460:9	inconsistent
identical	157:3, 4	213:6, 9	include	268:1
393:11	336:13	222:7	260:9	270:18
	ignore 15:8	227:25	298:1	incontroverti
identification	27:25 80:6	248:18	395:3	ble 105:23
108:10	III 4:21	262:24	464:12	incorrect
169:23	illicit	323:18	474:22	18:25
174:22	162:22, 25	358:4, 9		

increase 155:16 206:19 215:7, 12, 15, 21 221:13 225:5 387:15, 17 485:25	indicated 299:9 indicating 431:21 indication 12:2 235:1 239:6 465:25	informal 232:3 informally 344:17 information 68:4 87:25 89:17 98:23 99:3, 6 100:17 109:10 112:1 123:17 146:2 161:19 192:5 212:10 233:5 250:9, 11 258:7, 14 259:16 262:24 325:21 365:2 390:20 392:8, 11 394:11 396:25 401:1, 6 403:24 405:18 440:25 441:7, 14, 19 481:1 487:12 informative 359:5 432:23 ingested 192:10, 18 208:19, 20 ingestion 191:23 203:21	initial 15:21, 25 298:1 Innovative 356:4 inorganic 10:6, 9 295:21 input 334:1 inquiries 72:19 inquisitive 449:24 instance 16:25 66:14 83:23 99:1 119:21 125:24 129:24 197:12 239:3 282:21 302:17 431:19 institutional 111:22 112:7 145:17 institutions 392:16 instructing 284:22 INSTRUCTI ONS 489:1 instrument 218:22, 23 224:22 instruments 261:4, 18 265:9, 19 intake 216:25 226:17 299:2	468:24 469:1 integrate 249:19 intelligence 21:11, 12, 16 23:16 28:17, 21, 22 36:20 193:2 253:16 264:15, 17, 18 265:15, 16 266:20, 24 267:1, 3, 8, 15, 16 271:12, 14 272:5 273:6 275:10 276:10 278:16 286:17, 20 290:12 359:10 intended 332:4 intensity 216:16 intensively 63:22 interaction 74:20 75:5, 20 458:19 interest 56:2, 4, 10 138:17 162:24 177:9 356:1, 12, 19 436:7 461:13 interested 86:4 97:16
increased 130:4 239:23 251:11, 13 364:19 457:20 458:16 473:6	individual 129:8, 19 175:19 333:2, 21 373:6 436:6 440:5 470:2 individually 332:21 473:13 individuals 334:7 375:4, 21 induce 227:9 398:9 inducing 91:5 industry 49:22 Infant 10:2 infantile 471:11 inference 359:17, 22 360:12, 15 influence 242:2 426:18 influencing 257:3 367:13 influential 257:3 inform 416:13			
increases 105:6 increasing 252:2 incredible 463:22 incredibly 86:21 87:5 105:19 136:23 137:19 154:16 254:9 262:24 404:19 464:9 independent 81:14, 18 329:16 independentl y 81:15 335:10 417:7 INDEX 9:1 indicate 225:20 312:11				

124:21	interpretatio	intoxicants	217:9	JAMES
143:11, 12	n 220:24	18:12	348:10	5:12
145:17	470:6, 9	intrauterine	involvement	January
177:1, 12	interrelated	130:13	39:22	53:19, 20, 21
180:11, 21	125:12, 13,	introduction	IQ 203:1	56:15
192:14	14 212:8	179:24	Irish 412:2	57:15
249:2	330:12	428:20	irrelevant	86:12
314:21	interrupt	inventory	186:16	113:21
339:20	51:17, 21	340:8	isolation	114:20
401:7	interrupted	inverse	229:1	150:14, 20
442:1	483:24	371:20	issue 89:10	286:6
488:12	interrupting	461:19	117:15	JANUSH
interesting	25:21	462:3	118:12	2:20
23:25 35:1	173:7, 15	investigating	119:19	Jersey 1:20
93:22	interruption	17:17 18:2	187:18	6:3 488:21
96:23	28:4	20:9 336:10	375:1	JESSICA
102:21	Interstate	investigation	407:20	6:1
241:23	3:24	28:5	410:22	jessica.brenn
243:16	interval	investigators	419:16	an@btlaw.co
270:12, 14	212:9	335:11	434:7	m 6:2
317:15	381:11	427:19	461:21	Ji 11:16
322:20	472:9	investment	468:13	53:8, 14
381:19	474:20, 21,	87:22, 23	issued 68:8	291:10, 13
382:2	22 486:22,	108:25	issuing	361:16
389:13	23, 25 487:2	114:13	402:15	362:3, 4, 6, 7
392:10	intervals	145:16	Italian	394:2, 5, 17,
interests	212:7	investor	150:2, 3	20 400:14,
96:25	intervenes	111:22	iterations	24 403:3, 10,
434:23	240:5	112:7	378:24	25 404:1, 2,
inter-	interview	145:17	its 176:21	9
exchangeable	69:9	investors	181:19	Jim 15:7,
111:3	100:22	87:10	269:11	17 21:19
interfering	101:1, 2	invited	IV 208:21	26:1 32:10
135:2, 16	109:22	116:20		59:19, 20
143:12	interviewed	317:6	< J >	79:21
internal	69:7 70:5,	318:6, 16	J&J 407:13	105:25
182:13	10, 15 73:16,	invoices	J.J 2:3	126:18
325:23	17 74:1	10:4	14:13	139:16
379:12	100:25	involve	J.P 152:17	172:20
381:22	interviewing	66:9 407:6	302:6, 9	189:8
446:23	75:6	involved	303:19	228:1
interpret	interviews	44:23	JACKIE	255:22
196:13	375:18	151:16, 21	8:16	268:12
				284:11

289:16	177:4	KELLER	111:16	230:3
354:22	178:11	2:3, 4 8:16	112:13	238:25
375:23	212:22	KENDRICK	114:14, 16,	244:14
413:23	213:4	8:1	18 115:3	246:13, 19,
442:24	246:24	kept 57:22	116:18	22, 25
466:24	274:17	258:4	123:20	249:11, 16
jj.snidow@k	journals	KERSHAW	130:17	254:22
ellerpostman	171:9	5:1	131:22	257:12
.com 2:4	172:10	kids 240:2,	135:13	259:8
jlara@stoned	173:25	5 266:23	137:25	264:11
eanlaw.com	213:3	349:13	139:19, 24	282:9
8:7	JUDGE 1:5	423:15, 16	142:3, 11, 17	283:15
jmurdica@bt	27:14	kill 450:4	145:23	298:6
law.com	59:24	kinds 206:8	147:18, 20	303:8
5:12	79:12, 17	KING 2:5	148:18, 23	307:10
job 69:7	173:4, 10, 14,	7:1, 5 8:16	149:1, 2, 4, 9,	308:19
70:18	18 187:11	KINSMAN	11, 21, 22, 24	317:23
79:25	310:17	4:1	150:6, 8, 10,	318:5
85:19	333:12	knew 38:2	12, 18 151:3,	321:1
242:19	judgment	114:6 294:8	4 154:7	322:18
309:12	436:8, 10	know 23:20	156:8, 24	329:11
312:20	JULIEN	30:8 31:21	160:15	331:24
373:10	4:15	37:4, 5, 6, 10,	161:25	333:23
jobs 56:7	julien@dovel	16 41:22	171:2, 7, 12,	336:21
Johnson	.com 4:15	42:1 43:10	13, 15	338:25
6:4 13:24	jumbled	47:17, 19	172:22	339:23
112:15, 16,	157:7	48:2, 3	175:23	342:3, 5
18, 19, 20	jump	50:1 51:9	179:2, 6	350:19
323:23	212:18	54:1, 5, 21	180:1	351:19, 22
324:8	June 406:9,	55:5, 13, 24	186:9	352:2
JOHNSTON	12	60:13, 14	189:16	353:12, 18
5:13		64:18, 22	191:13	361:16
JOSEPH	< K >	67:20, 24	192:8	370:20
8:6	Kansas	68:21	194:8	377:20
journal	1:19 3:19	69:23	202:6, 7, 8,	378:22
138:10	4:4 488:21	74:19 75:4	10, 11, 15, 18,	380:20, 25
170:25	KATIE 8:11	79:7 82:7,	19, 23	381:16
171:3, 5, 7,	keep 43:3	12, 19, 22	204:18	383:9, 21
11, 14, 24	82:16	84:17	207:24	385:5
172:8, 11, 17	113:22	87:21, 23	212:25	387:20
174:3, 5, 8,	173:24	89:1, 2, 12,	213:7	393:2, 17, 18,
10, 16	316:3	15, 16 99:12,	214:15	25 400:21
175:16	343:20	18, 23 100:2	218:14	401:10, 16
176:6, 15, 16	358:9	101:14, 15	223:19	402:19, 23

418:5	11 166:11,	388:19	281:1	learn
429:14	17 168:4	480:12	286:8	251:20
435:13	210:11	485:18	288:10, 20	302:11
439:22	215:6, 11, 23	486:7, 9, 11	291:10	303:25
446:8	220:11	Larissa	296:22	learned
453:11	225:7	63:8, 10	322:12	79:7 115:5
460:24	257:14, 23	83:5 258:3	359:7	287:17
461:11	258:17	lasted	363:10	302:7, 8
466:19	259:2	101:17	Laue's 28:5	learning
470:15	260:10	late 14:10	35:10 36:8,	303:18
476:16	366:20	431:21	22 39:11, 21	leave 47:7
477:8	395:15	Laue 9:15,	LAURA	293:19
knowing	396:9, 18, 21	19 12:13	8:16	431:1
372:14	397:2, 8	20:12	LAUREN	leaves
knowledge	lab's 336:8	21:10	2:9	415:15
31:16, 17	lack 50:8	24:24, 25	lauren.schult	LEE 5:1, 20
77:17	232:11, 23	25:1, 2	z@kellerpost	left 49:17,
294:13, 21	233:13, 18	28:12	man.com	19 264:23
known	289:12	29:17, 23	2:10	464:11
305:25	474:10	41:10, 18	Law 1:13	473:21
knows 135:7	Lactation	44:3, 17	2:20 3:21	474:12, 23
KO 6:13	130:22	82:24	4:8 5:5	475:4
KOHANE	language	151:25	lawful 13:21	left-hand
6:7	123:22	152:4, 9	lawyers	434:24
KOSTICK	128:4	169:16	55:7, 15	legal 13:3
8:16	225:2	170:1	57:15 88:6	LEILA 2:22
KRAUSE	232:9	175:18	113:17, 20	leila.ayachi@
4:1	251:6	176:5	114:4, 9, 15,	lanierlawfir
kricher@btla	275:18, 19,	177:20	17, 19 141:9	m.com 2:23
w.com 5:15	20	191:8	145:24	lend 130:7
Kriebel	Lanier 1:13	193:3	149:13	length 252:9
149:23, 24	2:20	222:23	324:9	lengths
KRISTEN	LARA 8:6	223:6	434:18, 21	440:17
5:15	large	245:13, 14,	435:4, 21	Leppart
Kroger 8:9	325:22	17, 18, 19	LAWYER'S	71:25
ktrinh@hbbl	422:3	246:12	12:22 492:1	291:11
aw.com 8:12	423:3, 15	250:16, 23	lbosso@ksla	406:21
	480:17	251:10	w.com 7:7	410:10, 17,
< L >	larger	252:10, 11	lcain@mofo.	21 411:2, 11,
lab 336:6	40:10	254:17	com 7:13	22 412:5, 6,
429:3, 9, 10,	44:10	260:8, 14, 21	LE 5:2	21, 22
11, 12	155:17	261:3	lead 302:6	416:21
labor 158:2,	203:2	276:13	479:12	417:9
14, 23 159:4,	366:12	280:1, 8		418:9, 18

419:16	340:24	life 46:6	241:21, 22	152:15, 19,
420:3, 5, 6	344:24	355:17	290:9	25 153:9, 12
431:21	452:5	436:13	320:25	154:13, 16,
468:16, 25	Lexington	light 419:10	356:11	21 163:4
letter 35:25	3:13	liked 218:20	449:16	165:24
letters 36:1	LIABILITY	likelihood	451:9	167:2
letting 74:12	1:4 13:11	479:2	listed 253:6	169:9
level 46:4	Liew 12:10	limit 59:21	354:6, 8	186:6
153:5	17:7 53:8,	79:20	355:9, 23	205:13
154:24	11, 13 67:19	198:2	listen 51:10	209:15, 17
155:5	68:12, 14, 16	275:10	59:20	211:9
159:23	69:3, 4, 23	363:17	183:23	213:4
185:16	70:10 71:2,	limitation	listening	227:3
195:22	17 73:4, 11,	375:16	22:5 134:16	229:5
196:15, 24	15 74:2	limitations	lists 356:3	230:12, 14,
197:3, 5, 7, 8,	75:5 76:17,	44:15	literally	24 231:4
9, 24 198:4	18, 20 77:7,	464:12	90:3	237:3, 10
199:5, 9	14 130:3	limited	literature	238:6
200:6, 14	145:18	237:19	24:5 28:19	241:15, 16
202:9	265:4	321:19	29:2 30:4,	242:13
218:10	276:23	LINDSEY	6 33:18	263:9
230:19	291:7, 11	3:17	35:24	272:14
232:5	376:17, 18	line 172:22	36:19 38:9	273:18
236:4	404:24	173:1	45:16, 19, 25	278:19
249:22	405:7	201:5	50:18 52:1,	303:6, 21
271:8	406:2, 24	266:8	11 59:7	304:7
314:22	408:24	472:22	61:16	306:9
327:17	410:25	491:3 492:3	63:24	307:18
333:17	413:3, 21	lines 322:11	71:20	312:3, 8
341:5	414:4, 7	link 130:11	76:12 77:1,	321:1, 2, 5
362:14	415:8, 11, 14	184:22	3 89:25	322:7, 9
364:18	416:8	263:4	90:2	323:7, 8, 11,
394:15	419:16	361:25	101:23	25 324:2, 11
401:3	420:4	481:1	113:10	331:12
levels 157:4	455:2	linked	118:10, 20	358:17
192:12, 15	465:7, 14, 20,	282:19, 20	121:14	360:25
195:19	23 467:14,	299:2	122:1	380:5, 8
196:12	25 468:5, 11	list 48:13	124:22	381:17
198:8, 9	469:10	49:5 70:2	129:3, 6	407:15
202:24	470:17, 20	148:7	133:2, 4	432:21
243:13	Liew's	169:21	136:14	434:11
256:11	418:1	173:24	141:25	450:8
286:11	466:10	220:20	147:19	457:3, 10, 13
320:2		238:12	149:10	458:21

460:14	345:20, 21,	long-term	297:24	101:23
462:6	22, 23 348:1	269:16	298:17	155:4
464:22	406:18	437:20	300:22	158:19
466:14	415:21	look 16:23	311:12	159:9
literatures	416:1	19:4 20:16,	312:20	164:14, 15
185:13	423:22	17 21:14	315:8	175:7
litiga 223:19	437:11, 13	23:9 24:1	324:15	224:5, 8, 13
litigant	457:13	28:22 29:2	341:25	228:25
140:19	480:8	30:5 34:15,	343:13, 15	229:4, 5
LITIGATION	live 70:19	24 35:1	347:25	233:17
N 1:4, 21	liver 205:5	37:21, 23	354:5	235:4
8:21 13:4,	living	45:16	357:3	237:9
11 54:23	349:13	48:10	359:15	240:12
76:22 77:9,	LLC 2:3	110:12	363:20	241:13
15 80:17	3:1 8:14, 18	121:12	368:13	266:18
86:16 89:2	LLP 3:9	136:25	369:5	281:6, 14
138:16	5:9, 20 6:1,	139:16, 17	378:4	286:8
140:2	4, 13, 16 7:1,	163:22	380:23	291:18
143:3, 19	5, 12, 18 8:6,	166:17	385:1	311:1
144:18	11	169:25	391:24	312:3
223:20	loaded	172:20	402:16	313:12
230:1	239:8	179:10, 17	406:22	324:17
282:13, 23	log 10:4	180:2	421:12	364:11
293:10	144:19	187:9	428:19	414:16
294:9, 23	logic 207:15	194:3	429:13	416:4
305:14, 17	logs 145:2	195:10	431:17	437:15
307:6	long 62:1	196:11	434:13	440:5
319:12	73:21	203:4	439:22	476:9 483:8
321:25	91:11, 12	209:2, 21, 22,	441:16, 24	looking
406:25	101:16	24 210:14,	442:15	19:20, 24
435:5, 9	106:2	18 213:12	451:19	21:11
445:24	179:6	215:2	453:15	29:16
446:4	186:21	233:19	454:3, 7	39:22
447:11	342:12	239:3	455:4, 15	40:11
little 44:11	400:6, 8	241:19, 25	456:13	46:12
45:16	434:2	243:21, 23	457:12, 16,	61:24
157:12, 20	longer	247:1, 9	25 458:15	109:10
182:17	41:19	254:19	465:1	162:15
206:22	94:12, 13	260:24	471:9	164:13
230:21	222:9, 10	262:21	473:9	201:14
271:17	302:20	264:2	475:3, 4	213:19
331:11	323:24	267:22	477:18	215:1
336:15	longitudinall	268:8	looked 25:5	263:7
341:8	y 339:14	282:1	48:13 51:1	266:19

268:7	239:10	479:10, 11	221:1	293:18
284:17	241:15, 16	481:11	272:13	295:24
295:25	242:13	lower 197:8,	making	296:8
296:14	254:4	10 266:23	59:22	297:15
322:22	321:22	485:6	94:24	348:7
353:7	323:21	lscarcello@w	127:19	354:15
357:7, 15	329:7	cllp.com	238:12	368:2
359:10	333:9	3:18	305:2	394:1, 2
363:10	334:23	LUKE 7:7	445:21	437:18
389:2	349:22	lunch	485:17	438:12
399:13	373:7, 8	210:23	male 204:7	448:11
420:16	376:18	228:2	368:23, 24	450:25
431:10	377:9	229:21	males	467:23
433:23	378:24	LUNER	457:21, 22	marked
442:24	388:6	4:12	458:14	108:9, 15
454:16	395:1	lung 126:1	459:8	169:22
469:11	430:6, 7	LYNDSEY	manuscript	170:3
472:14, 22	440:1	7:12	176:21	174:21, 25
473:12	446:9, 13		269:4	191:11
looks 28:21	459:11	< M >	383:23	213:25
139:20	468:2, 21	machine	385:3	214:5
175:5 413:4	478:21	283:22	386:12, 13,	245:24
Los 5:16	480:25	Madison 6:8	24	246:6
8:13	481:24	magic	March	247:10
loss 461:25	Lots 8:14	305:4	11:12	283:24
lost 385:8	38:22	310:15	50:17 52:4,	284:3
413:24	105:20	439:20	11 53:3	289:24
461:9, 23	461:17	Mailman	56:17	290:3
lot 16:22	Louis 4:10	54:17 55:5,	119:22	293:22
34:13	Louisiana	13 81:10	330:25	296:9, 13
38:25	1:19 2:16	84:4, 5	420:8	297:12, 18
51:11	488:22	436:18	434:19	347:10, 14
62:23 63:3,	love 64:14	main 47:19	margin	348:2, 4
17 69:20	148:16	48:2	247:5	352:17
73:4 78:5	360:25	318:22, 24	marginally	354:12
85:1 95:14	407:6	386:11, 12	216:25	355:5
96:18	low 102:8	465:24	marijuana	367:23
128:1	172:7	major	163:2	368:5
139:13	341:1	194:4	mark	374:16, 20
154:12	363:15	233:19	108:13	384:8, 11
169:8	364:2, 7	majority	210:22	393:23
220:1	400:3	136:19	214:3	394:6
223:13	425:13	147:21	246:2	405:19, 23
235:3, 7			289:14	420:19, 23

428:5, 10	89:13	103:7	439:19	250:3
438:9	93:23	111:15	448:4	252:4
448:8	140:20	116:9	457:9	265:15
450:21	177:10	139:11, 12	461:14	277:11
451:2	250:18, 19,	141:10, 23	463:1, 9	376:4
467:20	25 405:15	143:25	469:4, 23	422:17
468:4	442:2	188:17	475:24	455:17
487:24	474:11	199:22	meaning	471:17
marking	matters	204:1	277:18, 24	Measured
428:8	206:7	210:13	350:6	10:17, 22
448:13	248:22	212:3, 5	375:10	11:5, 19
MARLOWE	mature	213:13	412:18	101:10
3:23	41:25	216:15	meaningful	153:5
Masarwa	mcharchalis	219:12, 24	213:20	155:3
30:11, 16	@btlaw.com	230:18	439:6	216:17
material	5:14	231:23	means	241:19
89:17 451:9	McTiernan	232:4, 16	176:25	265:9
materials	11:10	233:2	179:1	279:2
12:10	393:3, 5	255:6	182:15	382:18
281:21	394:1	259:7	209:24	399:19
323:18	mcwatts@wa	262:7	257:2	404:18
368:7	ttsguerra.co	267:19	263:3	420:12
411:13, 20	m 3:3	270:3	294:2	422:16
maternal	MD 1:12	272:15	394:25	
9:19 12:7	10:16	275:12	425:24	measurement
154:23	11:10	279:16	482:1	23:15
155:9, 11, 13	13:20	283:14	meant	182:9
191:22, 24	488:4	293:13	40:16	272:19
203:20	490:12	299:14	179:2	277:11
240:7, 15	MDL 1:3	320:21	250:8	289:12
241:6, 11, 14,	27:2	321:6	287:20	394:21
15 243:21,	mdowd@holl	329:10	333:19, 24	454:18
23 260:11	andtriallawy	330:24	375:14	measurement
279:10, 11	ers.com 4:9	340:13	426:14	s 360:21
361:22	mean 20:22	352:14	measure	366:14
369:12	29:24	360:24	98:25	measures
394:22	31:23 38:8	379:22	152:2, 3	301:8
413:14	39:6 59:3	381:9, 14, 21	155:9	471:13
414:9, 14, 18,	67:17	392:2, 3	159:22	measuring
21 415:2, 23	68:21 71:9	393:17	166:1	161:18
431:19	72:1 74:19	418:8	198:13	162:2
math 345:19	79:22 81:5,	425:5, 25	199:7	180:19
matter 13:9	17, 20 82:6	432:24	203:1	198:15
53:18 57:5	93:5 97:17	437:11	231:2	266:15

276:9	179:15	277:11, 14	median	Medicine
277:13	181:13, 19	279:3	201:7	212:22
280:19	182:1, 7	280:20	362:22	213:5
287:25	183:7, 14	286:11	363:2, 5, 12	316:18
358:19, 20	184:4, 14, 19	287:25	Mediated	446:23
mechanism	185:11, 19	289:12	10:19, 23	meet 316:9
268:3	186:1	295:7, 22	Mediation	409:18
270:19	188:6	299:17, 21	11:7 409:7	meeting
mechanisms	191:12, 25	300:8, 11, 13,	mediator	115:7, 12, 19,
105:1, 2, 16	192:15	15 301:20,	408:14	21 116:4
mechanistic	194:15	24 302:5, 8	409:2	meetings
161:20	195:5, 25	303:9, 16, 20	medical	82:14
Meconium	196:5, 8, 13,	338:1	19:15 24:9	member
9:13, 18	16, 24	339:16	64:20 66:6,	70:24
10:6, 10, 18,	197:23	340:8, 20	10 90:24	members
22 11:2, 6,	200:1, 7	341:12	115:19	38:1 82:24
20 21:14	201:21	344:7, 13, 14,	121:2	memorize
25:5 28:6	202:5, 17, 18,	19, 20, 23, 24	138:9	444:3
35:10 41:9,	22, 24	345:2, 5, 11,	142:4, 8, 21	memory
12 44:21, 23	203:16, 19,	12 355:15	158:20	71:11
151:6, 14, 16,	24 204:25	357:6, 11, 12,	276:9	222:19
19, 20 152:2,	206:3, 12, 15,	21 358:2, 20	392:2, 3	463:10
3, 5, 6, 10, 11,	17, 21 207:1	362:15, 21	401:14	mental
14, 15, 18, 20,	208:2, 10, 17,	363:23	446:21	243:4
25 153:5, 9,	24 214:14	364:21, 25	medication	413:14
11, 13, 15, 18,	215:3, 7, 12,	365:7	218:2	414:9, 14, 18,
19, 23	21 216:8, 11	366:9, 14, 16	220:25	21 415:2, 19,
154:14, 20,	217:1	368:18, 20	244:16, 24	23 437:23
25 155:6, 9,	219:16	373:17	245:7	442:22
13, 16, 19, 23	223:12, 13,	374:12	349:8, 14, 17	444:13
156:5, 9, 13,	23 224:10	375:7	351:21, 22,	mentioned
17, 18 157:7,	226:10, 11	377:23	23 352:22	43:16
17 158:4, 15	246:17	378:7, 12	353:25	73:16
159:24	247:17	379:17	354:1	78:12 82:4
160:12, 17,	248:1, 8	382:17, 18	399:12	84:25
24 161:5, 21	249:4, 5, 15,	386:14	401:11	104:25
162:11, 16,	18, 20 250:4	388:7	medications	111:7
19 163:1, 15,	252:3	420:12	204:5	115:8
19, 23 164:1,	255:19	421:2	207:8	117:13
9, 11 165:3,	256:6, 12, 18	454:14, 18,	217:13, 20	137:22
8, 25 166:12,	266:15	19	220:22	174:3
18 167:2	272:20	meconium's	401:11	193:4
168:2, 9	273:5	185:15	402:19	206:15
169:11	276:9	medal 333:9		216:6

248:14, 25	method	321:17	misread	mom 84:17
254:21	376:23	331:1	287:16	156:18
256:20, 24	methodology	337:19	misrepresent	199:13
271:18	280:2	358:9	ing 398:3	moment
295:2	methods	408:22	misses	58:21
300:4	77:6 266:18	415:16	201:13	212:8
303:11	METHVIN	438:5 457:4	missing	483:13
312:16	4:20	mine 33:6	58:12	mom's
316:6	meticulously	312:24	72:21 73:8	199:14
340:2	141:19	428:4	180:14	MONAGHA
342:10	metric	minor	260:17	N 3:11
407:7	265:14	308:2, 4	Missouri	MONDAY
410:20	mice 11:24	minority	1:19 3:19	1:6 175:8
434:20	MICHAEL	147:21	4:4, 10	money
454:22	4:8	minus 106:2	488:19	54:16, 19, 22
475:14	micro	minute	mistake	55:6 56:17,
mentioning	221:19	97:21	24:10	21 140:1, 18
21:24	microphone	343:25	127:19	144:5
365:20	231:12	476:24	369:3	146:13, 18,
mentor	middle	478:8	mistakes	21 147:11,
251:19	298:1	minutes	329:7, 12	13 356:17
449:15	362:25	88:20	misunderstood 79:23	Monica 4:16
merit 141:3, 4	443:22	89:22	MITCHELL	Monitoring
message	464:11	106:2	5:14 6:20	10:4, 7
178:2	midpoint	343:23	mittchell.ster	295:20
286:15	362:18	mis 395:18	n@arnoldpo	monograph
met 83:9	MIKAL 3:3	miscarriages	rter.com	316:16, 19
148:25	MILES 4:20	153:4	6:20	Montgomery
316:12	milk 208:19	154:5, 6	mix 395:22	4:22
393:8	Millennium	misclassificat	mixed	month
434:19	3:6	ion 102:14	222:12	155:12, 14,
436:13	million	221:8	mixing	22 250:11
meta-	157:2, 4	262:25	395:21	months
analyses	mind 20:18	263:1	model 417:3	152:22, 23
390:23	23:3 32:9	277:10, 18	modification	153:1, 14, 16
meta-	53:11 78:4	395:17, 19	456:16	155:17, 24
analysis	83:6	460:19	molecular	157:11, 12,
50:23	124:16	461:8	446:1, 5	14 165:9
382:12, 24	219:15	misinterpret	447:12	167:3
390:22, 25	261:13, 23	321:2	449:13	168:10
459:15	268:12	misinterprete	molecule	169:12
metabolism	303:20	d 287:16	198:24	185:17
375:3, 20	306:12	mis-memory	299:1	196:9
	309:14	460:16		

206:18	410:4	349:23, 25	56:13 58:1,	135:7, 15
208:5	423:19	350:3, 11, 20,	16 59:15	136:1, 12
226:12	425:13	24 351:5, 8,	60:4 61:19	137:24
248:15, 17,	mothers	10, 13, 20	64:16	138:5
21 249:3, 19,	61:25 91:1	355:17, 21	65:20, 22	139:1, 8, 21,
23 250:2, 10	152:21	385:4, 6, 25	73:18 74:9	23 140:15
300:9	155:4	386:25	75:1, 21	142:10
301:22	162:13	450:15	76:14 78:7	143:1
302:1, 19	192:11, 18	multiple	79:1, 24	144:12
400:2	194:23	27:5	80:9 84:15	148:22
453:5	208:6	119:12	87:19	149:18
463:7, 20	255:15	213:18	88:24	158:9
Montreal	368:21	334:1	89:11	160:4
295:11	401:2	335:11	90:16	162:6
morning	452:15	339:1	91:17	163:13
14:3, 4	455:6	340:1	92:13 94:1,	164:19
15:16 27:6	459:22	344:4	16 95:3	166:3, 8
282:3, 5, 12	motion	392:5, 6	97:1, 10, 24	167:5
287:8 352:3	14:17	446:11	98:8	168:17
MORRIS	motor	462:6	100:18	169:14, 24
7:18	265:10	463:25	101:12	172:24
MORRISON	mouse	multitude	103:20	173:6, 13, 17,
7:12	373:19	100:11	104:19	20 174:12,
Morristown	move 181:6,	MURDICA	106:3, 7, 9,	23 178:19
6:3	8 190:4	5:12 9:5, 7	18, 20	181:1
mortified	315:25	14:2, 12, 15	107:11, 17,	182:22
370:5	389:15	15:6, 11, 15,	21 108:5, 11	183:22
mother	movement	17 19:6	109:4	184:10
91:14	212:15	21:2, 25	110:23	186:14
99:21	MPH 10:16	22:17, 22	112:12, 24	187:4, 9, 15,
158:13	MRI	23:3, 17	113:14	17, 20, 23
162:13	348:12	24:22	115:11	188:12, 23
163:21	349:8, 14	25:15 26:5,	116:10	189:21
180:17	350:5, 8	14, 23, 24	117:1, 17	190:5, 9, 15
182:9	351:1, 6, 21	27:18, 20	119:3	191:1
188:4	352:4, 7, 8	28:2 32:5,	120:6	207:22
192:10	354:1	11, 12 36:4	122:4	210:7
198:17, 21	385:15, 16	40:22 42:9,	124:4	212:2
208:14	386:11, 16	19 44:19	125:3, 20	214:2
228:19	388:4, 9, 11,	46:7 48:6	127:2, 21	227:6
243:5	18 389:10	49:15 51:7,	129:7, 17	228:3, 6, 8
257:22	450:16, 19	14, 16, 20, 24	131:13, 23	229:11, 19
396:18	MRIs 40:12	52:15 53:1,	133:9, 19	231:15
	348:15, 22	16 55:4, 12	134:1, 18, 25	235:19

236:21	329:13	411:5	482:17	narrow
238:7, 11, 18,	330:13	412:19	483:6, 22	103:9, 19
21 243:19	333:1	413:25	487:15	Nashville
244:21	335:6, 23	414:3	Murdica's	115:17
245:4, 11	337:2, 22	415:7	481:20	nasty
246:1	338:9, 15, 23	419:14	mutations	449:24
253:1	339:7, 22	420:2, 21	239:19	National
255:8	340:17	423:4		12:10
256:1	341:6, 11, 18	425:21	< N >	36:16
257:17	342:2, 12, 16,	426:20	N.W 5:21	99:16
261:10, 15,	20 343:4, 6,	428:7	6:14	316:18
24 262:2	10, 21 344:2	430:10	NADINE	413:11
263:21, 24	345:7, 17	431:16	6:7	414:5 432:6
264:5, 9, 19	346:14, 20,	434:8	name 13:2	nature
268:14, 19	25 347:12	435:24	15:17 38:6,	269:12
271:1	348:6	436:16	12, 17 63:9	Navas-Acien
274:11	353:5, 8	437:1	65:1 83:4,	63:14
275:1	354:14, 24	438:6, 11, 18	10, 14	83:23 84:3
276:19	355:1, 4, 8	439:3	109:15	navigation
277:2	359:6	441:8	122:17	304:3, 11, 13,
278:22	360:3, 10	442:9, 18	146:6	25 305:7, 9,
280:14	367:14	443:1, 4, 8,	175:22	14, 18 306:1,
281:16	368:1	13 444:9, 16	214:10	3, 24 307:5,
283:7	370:25	445:2, 4, 5	245:16	12, 15, 23
284:1, 15, 23	371:3	446:15	305:1	308:5, 7, 11
285:1	372:11	447:4	393:4, 9	309:3, 11, 15
289:20	374:18	448:1, 10	420:9 421:6	310:2, 3, 12,
290:1	375:24	450:23	named	22 311:4, 15,
292:5, 17	377:10, 17	451:4, 22, 23	110:1, 2	20, 22, 23
293:1, 24	379:13	456:21	393:2	312:16
296:11	383:1, 6	458:3, 9, 23	names 63:7	313:4, 8, 14,
297:14	384:10, 23	466:23	83:7	24 314:7, 10,
305:21	385:10, 17,	467:3, 6, 10,	110:11	15, 17 315:5,
308:13, 20	23 388:2, 24	13, 22	146:1	18, 23
311:9	389:5, 24	469:15, 18	147:1	316:24
313:19	390:7	470:13	171:10	317:4, 10, 13,
314:4, 9	393:24	472:15, 24	nanograms	19, 22
315:15, 20	398:4, 24	475:2	196:15	318:23, 25
316:1, 5	400:12	476:17, 25	197:24	319:3, 7, 17,
318:14, 20	401:21	477:3, 7, 13,	200:7	19, 25
319:15	402:3	22, 25	201:8, 22	320:22
321:15	404:22	478:20	202:5	324:18, 24
323:1	405:21	480:4, 21	363:11	325:5, 6, 9,
328:18	408:13, 18	481:3, 15, 21	Naples 5:8	12, 25 326:5,

11, 15, 17, 21	172:21	306:25	Network	109:12
327:4, 6, 18,	173:6, 21	314:24	10:19, 23	125:5
19 328:1, 8,	175:10	360:22	11:7	129:22
13, 15, 20	184:20	388:20	neurobehavi	136:16
329:1, 3, 15,	185:1	408:24	oral 11:22	147:23
24 330:6, 16	188:19	421:18	Neurocogniti	148:14
332:3, 21	196:14	424:12	ve 9:14, 22	180:16
333:4, 22, 23	200:5	441:19		200:22
334:11	201:2, 6	466:21	neurodevelop	206:1
335:3, 4, 9,	202:7	needs	424:23	226:25
16 337:4, 11	203:8	156:18, 19	neurodevelop	253:11
404:12	217:15, 16	161:16	ment 12:6	263:18
431:9	238:19	205:1, 2, 3, 4,	32:20 86:7	271:11
452:2	243:23	5 206:4	95:15	272:18, 25
453:8	252:14	267:2	198:25	273:9
482:11	267:19	299:18	201:15	286:21
NCRA	282:8	335:10	230:4	346:3
488:17	285:23	450:19	275:11	397:21
NDD 10:14	287:18	469:5	278:6	398:18
NDDs	290:5	negative	286:12, 17	415:5
210:1	291:16	29:7 35:22	298:24	422:9
424:21, 23	307:21	211:12	423:13	450:1 476:7
near 402:6	309:8	221:15	426:17	neuroepidem
necessarily	311:24	243:15, 20,	433:10	iology
265:6	312:11	22, 25 254:2	445:11, 14,	447:23
necessary	319:21	275:18, 19	16, 18	neurological
489:4	325:16, 20	277:25	449:14	424:5
need 16:11,	330:8	279:20	Neurodevelo	neurologist
17 33:21, 24	342:22	345:5	pmental	18:9, 10, 17
34:3 38:1	343:17	395:10	10:2, 13	78:13, 14
47:17, 19	347:1	455:24	17:19, 21	neurology
48:1, 2	360:9	479:2, 13, 14	18:3, 18	78:12
50:2 65:15	380:19	482:21, 22	19:2, 5, 10	neuron
72:24	383:8	negatives	20:2, 15	91:13
78:12, 13	389:19	244:7	21:5, 8	neurons
90:1 95:23	401:6	262:11	25:4 28:18	96:1
104:16	408:23	377:8	32:14	neuropsychia
132:18, 22	436:20	433:14, 16	35:14	trist 355:16
133:1	437:18	neither	36:11	445:20
135:8	441:13	488:10, 11	39:24 45:7	450:2, 13
136:24	449:15	neonatal	51:6 80:12	neuropsychia
137:14	474:8, 9	130:23	92:21 93:1	trists 450:3
141:23, 24	needed	421:25	95:10	
171:20	185:4, 25		96:15	

neuropsychological	185:20 197:13 383:25	non-litigation	null 211:12 221:10 277:24	nurse 258:10 259:11, 21 NW 7:8
neuropsychologist 349:11	212:21 213:4 307:24	non-neurological	375:10 377:7 395:5, 7	< O >
neuroticism	351:4 390:21	nonpublic	479:17 482:5	oath 31:24 47:23 118:17 136:4 143:22, 23 447:18, 19
240:25	488:21	Nope 268:14	Number 27:1 179:18, 22 191:17, 21 193:25 194:4, 10 195:16 196:11 213:11 222:25 223:7 249:21 250:3, 4 340:16 358:3 365:25 384:12 386:9, 20 439:20 440:2 441:2, 4 454:9, 15 471:13, 18 473:18, 20 474:12	OB/GYN 121:3 174:5, 10 239:5 258:1
neurulation	newborns 299:19	normally 64:20 99:5 351:24		object 27:12 42:15 46:22 116:6 135:4, 9, 18 147:25 148:1 187:6, 8 198:18 238:9 244:17 245:1, 9 257:16 322:13 337:16 338:5, 13, 19 339:3 340:22 381:6 414:23 418:23 429:24 455:21 466:6 469:13, 17
never 38:9 46:5 47:21 72:17 139:6 146:12 147:7 148:25 179:3 217:7 218:4 219:12 251:22 290:7 291:17, 18 312:15 317:3 393:8 401:25 406:23 452:6 465:13	nice 59:2 61:12 77:18 157:11, 13 214:18 360:23 361:5 364:3 388:9	North 2:10 3:24 4:9 Norway 17:8 Norwegian 432:5 Notary 488:23 490:19 notation 452:14 note 102:11 453:8 noted 13:14 489:10 490:7 notes 30:25 31:2 492:1 NOTES..... 492 12:22 notice 146:24 147:4, 14 413:7 noticeable 474:6 Notwithstanding 424:9 Novel 9:18 388:20		
nevertheless 177:16 481:17	NIH 407:25 408:2 nine 310:7 327:1, 2 485:10	nkohane@btlaw.com 6:7 NNDs 50:21 Nods 445:3 nonbeliever 283:1, 2, 4 non-biased 251:21 nondifferenti al 263:2 460:19 461:8 non-doctors 84:8 nonexposed 395:1, 22 486:19		
NEW 1:1, 14, 19 2:24 3:13 6:3, 8, 21 7:3, 15 8:3 13:9 17:2, 5 30:22 44:11 70:19 117:3, 8 179:3			numbers 221:18 223:9 250:1 357:4 364:13 366:1 369:7 370:14 numerical 418:12	18:20 20:3

21:17	127:16	264:4, 12	408:11, 15	
24:13 25:7,	128:10	270:23, 24	409:15	observational
10 26:17	129:13	274:5, 20	411:1, 9	50:22
27:17 32:3,	131:11, 16	276:14, 25	414:23	98:11
7 35:15	132:10	277:1	419:21	269:12
39:3, 6	133:14, 22	278:12	422:11	308:9, 10
40:1 42:5,	134:5, 23	280:5	424:17	332:1
16 44:5	135:10	281:7	425:9	359:16, 21
45:8 46:15	136:8	282:14	426:7	360:14, 20
49:1 50:11	137:9	291:15	431:5	403:4, 19, 21,
52:6, 19	138:3, 4, 24	292:9	434:3	23 429:18
54:24 55:8,	139:3, 15	305:15	435:10	430:23
16 57:19	140:5	307:8	436:2, 23	observe
58:9 59:10,	142:6, 13	308:17	438:2	413:13
21 61:4	144:7	311:6	439:1	observed
64:8, 9	145:10	318:9, 17	440:18, 22	268:4
73:12 74:6	149:14	319:13	442:6, 16	270:20
75:10 76:7	158:5	321:11	444:1	obstetrician
77:10, 11	159:25	328:4, 23	446:6, 18	61:21, 22
78:21 80:2	160:13	329:18	447:14	62:12, 16
84:9 87:15	163:10	332:23	458:1, 8, 12	171:18, 21
88:7 89:5	164:4	334:4, 5	466:7	obstetricians
90:9 91:7,	165:21	335:12	470:7	62:9, 20
23 93:16	166:5, 20	336:23	472:11	obstetrics
94:6, 21	168:5	339:18	474:14, 15	62:5
95:19 97:8,	169:4	340:10	475:21	119:25
12 98:2	172:19	341:10, 14,	480:4	171:24
100:7	178:16	21 344:9	481:3, 21	172:17
101:4, 19	180:7	345:15	482:17	174:16
104:2, 8	182:3	358:13	483:11	175:17
107:3	183:8	360:1, 5	objections	176:16
109:2	184:6, 8	366:23	39:1 61:14	246:23
110:19	185:7	370:23	131:21	obstructionis
112:9, 23	188:8	371:1, 7	187:14	t 190:6
113:4	207:10	378:20	419:1	obvious
114:24	209:11	383:4, 13	objective	72:23
116:14, 15	211:22	384:21	251:15, 20	obviously
117:5, 23	226:20	385:22	265:13	407:14
119:8	235:17	387:23	320:4	485:9
120:16, 21,	236:15	397:6	objectively	occur
23 123:3	238:1, 16	398:11	23:9 251:16	218:19
124:12	243:10	399:7	observation	occurred
125:7	252:5	401:18	396:3	101:1
126:16	255:2	404:6		

176:10	231:13	65:4, 12, 19	139:9	200:2, 10
224:2	288:7	66:3 67:13,	140:16	201:5, 16, 25
occurs	302:13	25 68:6, 11	144:13, 15,	203:10, 19,
301:13	311:21	70:14 71:6,	22 145:14,	24 204:10
odds 211:7	362:11	8 73:9	15 146:23	206:24
376:13	375:25	75:2, 14, 22	147:6	207:5
379:1	389:1	76:15, 19	149:1, 19	208:16
472:23	428:2	77:7 78:8	150:9, 13, 17,	209:8
473:1	448:11	79:1, 13, 24	25 151:5	210:8
486:5, 9	482:18	80:15, 22	155:11, 21	211:18
offer 38:18	Okay 15:6,	81:1 82:25	157:15, 23	212:3, 11
321:14	14 16:3, 7,	83:11 84:5,	158:10	213:1
offered	12 17:14	16 85:21	159:20	214:4, 9, 22
15:20, 23	18:8 19:7,	86:1 87:9	161:14	215:5, 25
122:21	13, 23 20:17	89:12, 16	163:8, 14, 18	216:3, 24
offering	21:3, 13	91:18	164:20	218:16
33:23 120:3	26:5, 14, 22	92:17, 23	165:5, 13	220:3, 7, 14
officer	27:15 28:1,	93:12 94:2,	166:9, 15	223:5
285:17	11 29:11, 16,	17 95:4, 6,	167:6, 16	225:1, 10, 23,
offices 1:12	21 30:5, 15,	16 98:13	169:15, 19,	25 226:4, 6,
official	19 31:4, 8,	99:9, 18	25 170:7, 11,	7, 16 227:7
283:14	18 33:1, 14,	105:24	15 171:2, 22	228:1, 11, 15
offspring	21 34:3, 8,	106:6, 7, 23	172:6	229:8
91:22	15 35:2, 9	107:3, 12, 17	173:5, 14, 16,	230:7, 15
226:19	36:14, 21	109:25	20 174:18,	232:17, 22
240:9, 16	37:1, 4, 13,	110:12	24 175:6, 10,	233:3, 12, 25
oftentimes	16, 21 38:5,	111:12, 16,	14, 15 176:9,	235:20
257:13	11, 16 39:10,	17 112:5, 13	13, 19, 23	236:8
Oh 18:10	19 40:23	113:22	178:13, 25	238:18, 22
19:11	41:1, 8	114:18	179:9, 13, 17	240:12, 14
29:18	42:10 43:5,	115:18	180:4, 22	241:10
38:15 53:7	12 45:1	117:2	181:15	242:6
58:20	46:8, 11	122:5, 11, 16,	183:23	243:7
60:18	48:10	24 124:5	187:2, 16, 22	244:13
62:11	49:20 51:8	125:4	188:13, 16,	245:5, 12
66:12 68:9	53:5, 23	126:11, 16	18, 21, 23	246:4, 5, 11,
86:2	54:8, 13, 16,	127:1, 8	189:7, 24	15, 19 247:1,
146:14	21 57:11	129:18	190:9, 11, 18	4, 9 250:21
158:10	58:2 59:19	132:2	191:5, 10	251:3
172:8	60:3, 23	133:20	192:4	253:2, 9
187:13	61:1, 20	134:2, 19	193:19	255:9, 21, 25
193:19	62:8, 14, 18	135:11	194:9	259:22
196:20	63:2, 12, 18	137:3	195:2, 16	260:1, 16, 20
214:17	64:1, 5	138:12, 19	197:16	261:25

262:3, 6	319:1, 11	385:24	445:4, 9	250:4
263:10	320:5	386:7	446:16	399:19
264:4	321:16	387:5, 12	447:5	oncology
266:3, 5	323:2, 14	388:1, 3, 8,	448:2, 11	246:21
267:21, 24	324:22	12 389:9, 15,	449:11, 19	one-on-one
268:15, 20,	326:24	20 390:18	450:5, 24	239:24
22, 25 272:6	327:5, 22	391:3, 7	451:14, 17	ones 234:10
273:16	329:10	392:12, 25	452:4	258:13
274:12	330:14	393:10, 15,	453:1, 11	344:19
275:16	335:7	19, 25 394:4,	454:7, 24	345:4
276:7	336:16, 21	10 398:5, 25	455:12	369:23
278:23	340:7, 18	399:18, 23	457:2, 15	383:24
279:14, 21,	341:7, 19	400:22, 25	459:13	452:1
25 280:15,	343:5, 18, 21	402:4, 18	460:3	464:1
25 281:17,	344:6	403:3, 15	465:1, 10, 15	482:9, 19, 20
24 282:10,	345:9	404:23	466:23	one's 452:7
11 283:19	346:9	405:5	467:3, 11, 12,	one-third
284:2, 8, 23	348:2, 7, 12	406:5, 8	23 468:10	388:1
285:5, 8, 21	349:21	407:2, 8	469:21	ongoing
286:2, 3, 13	350:2, 11, 14,	408:5	470:14, 21	58:17
287:5, 9	17 351:3, 19	411:6	472:5	80:18
288:4, 23	352:2, 16	413:2, 21	474:5	269:15
291:3	353:9, 24	414:2	475:3, 15	Online
293:5, 15, 17,	354:5, 10, 18,	419:15	477:3	10:21 11:1
25 295:1	25 355:7	421:5, 8, 12	478:5	354:16
296:3, 18, 21	356:2, 6, 20,	422:7	484:4	open 77:18
297:9, 15	25 357:3, 9,	423:5, 20	487:17	128:19
298:4, 8, 14,	11, 15	424:9	OLAFSSON	251:24, 25
16 299:12,	360:11, 20	426:21	8:1	307:2
16, 24	362:5, 10, 13,	427:12, 17	old 41:18,	opened
300:17, 22	23 363:3	428:8, 9, 16	19 43:9	291:17
301:16, 19	365:3, 21	429:2, 8, 16,	156:25	openly 82:8,
303:1, 7	367:20	22 430:14	349:4	9
304:9	368:8, 11, 12,	431:17	462:17	opinion
305:9, 13	18, 22 369:1,	434:9, 22, 25	older 239:4	15:20 19:8
307:4	5 370:16	435:2, 3	Olsen 130:3	23:22 34:4
308:21	372:16, 22	437:14, 17	omit 257:14,	50:3 60:15
309:2	374:7, 22	438:7, 12, 13,	21	67:2, 8
311:25	375:25	17, 22	Once	69:18
312:14	378:14	439:12, 21	140:24	84:17 85:9,
315:15, 24	380:22	441:9, 18, 21	199:13	23 86:9
316:4, 9, 13,	381:21	442:3, 10	200:3	87:2 88:21
22 317:2	383:9	443:10, 12	245:5	89:23 90:5
318:21	384:11	444:10, 16		128:23

129:3	117:4, 8	orally 197:6	Oscar	125:5
141:24	121:20	199:25	468:16	129:11, 22
146:3	124:17	200:16	Ostrea	136:17
167:23	143:25	208:19, 21	302:23	137:22
172:7	144:1	ORDER	outcome	147:23
175:20	230:10	1:6 89:13	20:8 21:16	160:7
207:7	254:24	95:21, 22	48:24 50:6,	174:15
209:9	266:9	118:15	10 52:1, 18	180:16
213:6	283:18	156:17	103:25	203:3
226:22	290:16	329:2	104:24	209:7
230:8	292:7	383:11	107:2	213:22
266:1	304:2	469:4	120:13	269:16
270:14	311:18	Oregon	132:9	325:17, 18
282:24	320:10, 12	63:21	200:22	332:8
283:9	334:16	organic	241:12	346:4
288:3	406:13	10:6, 9	252:4	397:3
292:12, 14	437:12	295:21	286:21	419:19
294:14		organization	325:18	420:13, 17
299:11	opportunities	65:6 66:10	358:22	421:16
304:24	312:20	332:11, 12	401:8	422:10, 21,
309:13	opportunity		407:5	22, 25 423:1
323:10	310:23	organizations	422:14, 15	424:5, 15
324:4, 6, 7, 8,	312:22	66:1, 4, 6	428:2	425:1, 4
9, 14 329:2,	425:9, 18	142:4, 9, 21	453:16, 23	426:6, 12
8 334:19	427:8	332:6, 17	454:16	427:25
380:3	oppose	334:9	459:3	439:9
405:11	14:21	organize	462:11	462:16
414:21	opposed	444:17	484:8, 22	475:20
442:2, 12	234:16	original	Outcomes	477:20
453:3	280:21	45:2 50:19	10:3 11:20	outlier
466:11	456:19	73:20, 25	17:19, 21	380:9, 10
470:19	473:21	324:18	18:4, 18	outliers
opinions	opposing	373:11	19:2, 5, 10	28:19
16:7, 10	26:19	398:25	20:2, 15	outside
32:14, 15, 17	opposite	483:25	21:6, 8	81:10 83:1
33:22 34:9	129:16	489:14	25:4 28:18,	392:13
35:3 62:10,	220:15	originally	23 35:14	overall
20 63:6	335:21	338:16	36:11	136:22
78:18	opposition	374:1 484:7	39:25 45:7	253:19
81:25 82:1,	14:25	origins	57:18	254:8
10 83:17, 19	optimism	125:17	58:19	307:3
84:8 85:5	59:18	ORTEGA	80:12, 24	459:10
89:21	oral 197:21	8:20 13:2	81:3 92:21	473:14
92:19			93:1 95:11	484:12

overinfluence	package	471:7	171:23	309:25
d 266:9	371:22	491:3 492:3	175:18	310:8, 12, 21
overlapping	372:9	pages 16:23	177:1	315:9
486:25	PAGE 9:2,	259:1	181:6, 9, 12,	320:13
over-rely	10 17:8	296:5 490:5	23 182:6, 7,	325:10
212:14	50:16	paid 54:8	20 183:4	337:20
overrepresen	110:13, 14	88:5, 12	184:1, 11	338:7, 22, 24
t 194:15	111:18	92:19	185:23, 25	339:20, 23
overrepresen	129:25	109:24	186:6, 11, 19,	341:24, 25
tation	131:10	147:3, 7, 8	25 188:3	342:1, 3
206:20	146:15	254:24	189:13	345:24, 25
overrepresen	179:17	282:12	198:23	346:6, 12
ted 195:5	191:10, 14	292:7, 11, 13	199:18	361:2
overview	193:24	319:12	200:19	367:21
225:22	247:10	435:8 446:3	201:2	376:11
overwhelmin	250:13	pain 234:24	202:13, 25	380:4
g 136:19	255:10, 11	400:3	210:14, 18,	388:4
183:10	260:22	painkillers	19 248:23	400:16
185:10	261:11	121:8	252:8, 9, 13	401:9
221:1	263:13	paper 17:6	253:14, 17,	407:6, 9
272:13	264:21	28:15 36:3,	19, 21, 23	409:16
320:17	267:22	8, 22 38:6,	254:1, 2, 4, 7,	412:25
329:6 361:4	268:9, 10	12, 13, 17, 20	11, 17, 21, 24	414:11
oxidative	271:22	39:11, 22	255:4	420:10
105:7	297:25	41:10	260:6	423:9, 21
Oxnard 8:7	298:5, 11, 12,	45:12	264:14	424:11, 19,
	17 300:22,	47:17 48:7,	269:5, 10	22 425:3, 10,
< P >	23 347:20	20 49:8, 11,	272:3, 4, 11,	24 426:10,
p.m 229:13,	357:8, 9	24 57:14, 23	12, 16, 22, 24	11, 16
15, 17	359:12	58:3 59:2,	273:3, 20, 25	427:11
292:20, 22,	368:9	5 60:1	274:3, 4, 8,	429:1
24 347:4, 6,	371:13, 16	66:21	10, 13, 16, 22	430:16, 18
8 390:1, 3, 5	384:24	85:13, 15, 18	275:6, 9, 13,	435:13, 14,
444:21, 23,	390:15, 19	100:1, 24	14, 21, 22	19 438:5
25 478:12,	391:8, 13, 20	123:11, 13	276:2	444:8
13, 15	403:12	124:3	278:15, 19,	450:7
483:16, 18,	421:8, 12	128:3, 15, 16,	20 283:6	456:10
20 487:20,	434:13	18, 22 129:6,	286:2, 4, 15	459:11
22	443:9, 11, 22	8, 19 141:14	288:25	467:15
p10 239:20,	448:15	146:5	291:21	468:25
21, 22, 23, 25	451:21	151:22	295:8, 18	476:13, 16
240:2, 6	459:19	168:19	302:4	papers
	465:2, 3	169:1, 8, 16,	306:18, 20	18:12
		18 170:1, 20	307:2	20:13

33:19	326:1	265:20	457:16	410:10
34:13, 16	327:11	279:5, 7, 12,	458:5, 25	470:12
35:23 37:8,	336:25	18		480:11
22, 23 40:19	339:1	parents	participating	parties
47:10, 13, 15,	340:1	239:4	461:13	488:11
20 48:3, 23	346:15	Parietal	particular	PARTNERS
49:5 50:2,	376:19	11:7	21:20	5:5
7, 19 60:13	380:6, 7, 8,	Park 3:6	26:20 85:3	parts
61:24	12 403:20	5:16 6:2	92:24	107:14
68:20	406:17	part 24:5,	93:13	220:1
71:21 72:3,	414:17	21 28:20	101:17	392:22
19 73:5	420:6	41:5, 8	111:9	party
77:4 78:6,	429:4, 6	65:24 66:2	142:9	294:23
10 80:21, 23	430:7	67:19 69:8	162:12	356:13
82:15	433:23	114:8	163:20	pass 204:25
90:25	439:11, 13	131:19	181:25	205:4
124:23	445:16, 17	211:18	182:1	passing
131:3	448:4	219:25	183:5, 6	206:11
147:19	449:20	227:12	184:2, 3, 13,	pasted
168:12, 20	451:8	256:15	14 188:5	369:10
172:9, 10	453:6	267:5	219:25	patient
173:23	468:2, 8, 17	282:13	239:15	74:10, 12
184:24	Paracetamol	283:18	252:10	99:10
201:1	10:1	289:20	362:23	pause 25:8
205:12	paragraph	300:7, 10, 15	particularly	120:20
211:9	27:4, 13	348:9, 12	20:11 22:8	pay 57:1
232:7, 8	179:24	349:6	52:6 68:1	109:21
240:18	264:2	366:11	74:6	146:9, 25
246:10	267:25	369:20	102:12	pays 56:12
253:24	272:2, 9	372:22	103:5	PDF 296:4
254:5, 10	359:14	397:9	118:6	353:6
272:13	375:1, 24	419:4	119:17	371:13
273:14	377:18	426:25	143:24	peace
277:9	391:13	427:5, 12, 21	162:22	219:15
279:22	421:14	447:1, 6	186:8	pears
280:2	428:20	449:20	239:3	454:17
285:20	429:17	453:2, 7	244:12	Pearson
296:25	448:20	481:7	280:18, 19	53:24 54:6
309:10	464:11	partially	303:19	81:9, 13, 14
310:25	parallel	432:8	307:1	114:7, 13
312:2, 5, 10	327:4	participants	309:24	115:5
320:1, 8, 25	329:20	115:22	366:16	116:1
324:12, 15	parental	455:25	398:19, 20	145:22
325:4, 15	261:5, 18	456:1	404:15	373:24

374:3	212:12, 17	136:19, 20	peripartum	phenotypes
427:5	219:1	150:23	159:12	41:20 267:7
428:21, 23,	222:12, 13,	160:23	394:23	Philadelphia
24 434:17	17, 25	177:5	Perrine	7:20
435:3, 22	239:21	196:23	175:23	phone
436:9, 11	258:11	210:17	persistent	88:20
437:7, 9	262:22, 23	221:7, 13	400:4	112:2
Pearson's	272:4	222:3, 13	452:11, 21	144:20
427:7 428:4	282:9	234:20	457:19	phonetic
peer 39:6, 8	307:11	340:19, 23,	person	63:16 377:3
pending	317:16	25 341:7, 19	72:13	phrase 34:7
126:21	344:12, 18	344:6	78:11, 13	physician
314:9	345:2, 3	345:13	109:7, 8	18:16
	363:19	357:23	110:8	20:22 24:6
Pennsylvania	365:17, 18	364:4, 6, 7,	115:13	218:18
7:8, 20	366:12	18 376:15,	147:9	259:21
people	368:20	20 430:2, 5	222:24	446:21, 22
43:18	376:16	458:16, 18	223:12	physicians
44:12	395:21, 22,	473:5, 7, 10	285:18	99:4, 5
61:13	25 396:6	482:24	317:22	259:12
62:23 63:1,	397:22	percentile	321:4	pick 197:10
3, 17 64:24	402:24	362:20	393:18	198:12
65:3 67:5,	417:14	perfect 49:7	450:1, 19	426:10
11, 14 72:18	423:14	329:11	471:14, 18,	picking
73:2 75:18	426:1	perfectly	20	161:5 269:6
78:5, 6	436:12	20:23	personal	piece 380:5
81:24	439:7	38:10	84:6, 13	pieces 186:7
82:10, 15	445:25	121:5	177:24, 25	pill 99:21
85:1, 6	446:4	276:7	178:2, 3	156:13
96:8	447:12, 21	439:19	179:4	201:17, 19
103:17	452:15	perform	person's	452:22, 25
110:11	454:22	390:21	334:2	454:22
111:14	460:16	performed	Petersen	pills 161:25
140:24	463:17	332:4	291:8	202:3, 4, 8
145:19	479:7, 16	performing	Ph.D 1:12	pilot 377:12,
146:1, 4, 6,	480:14	333:3, 22	10:16	21 378:5
10 147:11,	484:13	435:7	11:10	379:10, 11,
15 148:3, 8,	486:18	perinatal	13:20	14 380:17
10, 16, 19	perceived	402:9	488:4	484:23
153:10	177:8	period	490:12	PIs 427:18
154:7	percent	92:23, 24	pharmacolog	Place 6:2
171:11	47:15	93:13	ists 121:4	482:6 488:8
176:1	59:17 60:1	394:23	Pharmacy	placed
205:7	103:15	397:11	6:9	482:8

placeholder 293:19	plausible 105:3	205:12	352:24	population 255:15
placenta 199:15	play 39:3 303:12	230:11	353:2, 10	337:14
placental 105:5	466:15	236:5	358:1, 4, 17	348:18
places 393:12	plays 464:25	243:12	361:1, 8	362:16
plain 225:2	Plaza 2:10	397:18	363:6, 12	PORTER 6:16
plaintiff 138:22	Please 15:13 23:1	457:7	364:10	portion 340:18
Plaintiffs 5:9 12:17	24:20	PLLC 2:20	399:14	346:1
14:11 31:6	31:21	Plus 433:4, 5	411:21, 24	374:12
55:6, 15	58:12	point 27:10	418:21	PORTIS 4:20
57:15 58:8	65:21	35:11	419:17	pose 468:22
76:6 86:16	67:24	39:10	435:5	posed 375:12
88:5	102:5	40:20	439:24	position 142:22
113:17, 20	103:19	55:24 68:1	441:10	316:15
114:4, 9, 15, 17, 19	116:8	73:3 88:12	462:23, 24	436:17
138:23	123:20	89:2, 25	468:14	481:20
145:23	178:2	102:12	472:8	positive 148:15
149:12	183:1, 23	114:6	487:11, 16	160:24, 25
150:7, 11, 19, 20 293:6	213:7	129:18	pointed 38:24	200:1
294:4	247:25	153:18	224:10, 16	211:6, 11
434:17	264:7, 20	154:22, 23	386:5 460:7	254:2
435:4	271:21	164:13	pointing 369:4	256:22
plan 11:2	308:18, 22, 25 309:1	168:18, 20	points 207:20	277:12
381:24	321:20	180:14	334:1	278:2
382:12, 24	347:19	198:22	police 116:19	280:21
484:5	368:2, 3	207:18	Policy 11:11	345:3, 4
planning 58:15	371:6	211:5, 15	politely 264:1	395:11, 12, 13 396:20
141:12	374:4	227:18	Pollutants 336:14	433:17
402:5 407:3	390:11, 12, 16 434:14	239:17	polygenic 408:7	472:8
Plasma 11:13	445:8	252:23	409:8, 11	479:3, 13
361:23	449:22	262:8	416:10	480:11
394:21	465:9	264:14	417:7, 10	482:20
plausibility 168:9	489:3, 8	266:12	431:19	positives 277:25
	plenty 90:22	271:18	469:11	377:9
	152:19	278:14	poor 486:1	Posner 349:11
	156:6	280:17	popular 307:18, 19	
	165:24	290:5		
	173:1	294:10		
		300:5		
		307:23		
		311:14		
		322:4		
		330:8, 19		
		348:25		

355:15, 20	140:8, 9, 12,	preclinical	104:23	256:9, 16
356:3	17, 22	205:19	105:18, 22	269:15
386:8, 18	230:12	predetermine	107:1, 10, 15,	277:21
poss 205:9	231:3	d 319:24	16 117:22	298:22
possible	232:9	337:11	124:18	301:25
29:6 39:3	236:6	predict	130:21, 24	303:10
47:10 49:7	356:11, 19	461:2	152:22, 23	358:24
60:9 94:14	371:19, 23,	463:12	153:2, 14, 21	367:3, 4
97:7 126:5	25 403:5		154:24	394:16
195:19	404:3, 14	preeclampsia	155:1, 12, 14,	395:20
204:9	431:22	422:5	18, 22	396:8, 22
206:25	potentially	prefer 14:5	156:14	397:9, 11, 13,
208:1	161:22	preferred	157:17, 19,	20 398:22
248:9	301:20	174:11	22 159:23	399:3, 5
303:13	power	prefrontal	160:11	422:18, 22,
321:6	288:14, 18	11:22	161:3, 6	24 431:21
323:20	358:3, 7	pregnancies	162:14, 18	439:6, 8
334:12	363:8	153:7	163:22, 25	440:4, 17
349:24	365:9, 12, 13,	pregnancy	164:10, 17	441:11
382:16	19, 22 366:3	9:21 10:2	165:4, 9, 11	452:16
396:10	433:1	12:1, 6, 9	166:10, 16	454:23
467:18	454:19	17:18 18:3	174:15	462:11, 13,
485:12	456:5	19:9, 17	181:18, 25	21 463:1, 25
post-	473:16, 23	20:1 36:10	183:6, 13	464:2
conception	479:10, 12	45:14	184:3, 13, 19	469:2
95:18 97:5	480:8	48:24	185:17	472:7
postdoc	481:11, 12,	50:10	188:5	476:5, 6
407:24	25 482:10	57:17	197:2, 23	pregnant
408:2	484:20	58:19 62:3	206:5, 14	61:25
posters	powerful	66:19, 22	208:25	121:6
115:24	186:2	80:13, 24	215:2, 16	196:14
POSTMAN	244:5, 12	81:3 87:7	216:25	200:5, 15
2:3 8:18	PowerPoint	91:4, 10, 15,	217:7, 13, 17	201:6, 20
postnatal	12:13	21 92:3, 5, 8,	224:15, 20,	202:1
205:10, 15,	practice	12, 20, 24	21 226:12,	234:20
16, 20, 22, 23	421:19	93:3, 4, 9, 14,	23 227:13,	244:15, 23
206:6	423:7	20 95:9	25 228:21,	245:7 464:5
209:9, 19, 23	424:13	96:11, 16, 17	22 230:9	preliminary
210:2, 3, 5	426:4, 18	97:22	231:22	252:14
postnatally	precise	98:21, 22, 24,	234:1, 4, 8,	378:1 487:6
208:9	440:7	25 100:5, 16	24 235:12,	prenatal
potential	precisely	101:24	22 236:12	10:4, 9, 13,
56:6	101:9	102:16, 19,	237:6	17, 21 11:5,
138:17	248:10	25 103:25	250:6	19 23:14

50:21 51:3, 4, 5 128:25 205:14, 17, 24 206:7, 9 209:4, 25 231:19 241:3 272:18 273:1 295:21 420:11 421:15 423:7 429:19 prenatally 18:13 242:3 430:24 preparation 76:12 281:17 284:9 402:20 prepare 284:20 381:23 401:12 prepared 319:18 preparing 314:25 prepped 259:3 prescribed 218:18 259:20 presence 155:23 165:7 181:19 216:11 PRESENT 8:16 111:6 141:6, 20	212:9 225:13, 14 301:8 354:2 presentation 12:13 68:16 69:5 116:21 225:15, 21 317:9, 18 presentations 116:22 125:22 presented 226:1 317:5, 12 presenting 17:2 presents 66:20 press 382:7 pressure 422:5 423:19 425:13 preterm 422:2 423:2, 18 pretty 20:20 36:2 47:2, 8 56:9 60:11 71:23 77:15 117:10 123:21, 22 147:10 161:4 164:8, 21 196:21 203:13 216:3 219:7, 8 221:11	255:5 301:25 304:17 307:17, 19 310:20 330:10, 11 331:2, 5 332:18 350:10 351:25 352:9 373:6, 9 381:12 389:13 394:24 399:21 415:11 424:7 426:11 430:1 433:19 462:7 469:24 474:20 479:8 480:19 485:20 prevalence 12:1 221:5 357:24 437:21, 22, 23 443:19 previous 265:3, 8 266:18 271:19 314:16 315:24 359:1 previously 181:17 261:4, 18 265:19 355:5	primarily 265:8 primary 231:3 323:7 principal 427:19 principle 137:5, 12 principles 318:22, 24 319:2 print 293:17 printed 296:4 Printout 9:23 284:3 prior 37:2 58:7 66:10 92:18 206:11 229:25 231:18 252:18 253:11 263:13 285:6 309:4 314:7 386:4 427:14 462:10, 23 488:3 priori 251:9, 12, 13 325:4 priority 177:7, 11 privilege 10:4 pro 14:17, 21 22:9 probability 130:4 371:20	461:20 462:3, 4 probably 43:8 69:5 70:8, 12 116:25 135:23 141:7 144:25 146:17 148:8 149:6 172:9 175:8, 21 181:13 219:4 223:4 247:8 261:10 262:9 266:9 267:11 279:16 281:14 282:4 287:11 294:6 317:9, 11 318:3 324:20 333:13 361:2, 5 375:9 381:17 401:16 425:7, 11 435:17 472:3 486:24 problem 45:21 86:22 87:6 113:10 117:15
---	---	--	--	--

118:9	390:10	project	89:13	proximal
119:14	445:7	47:18	455:19	199:11, 17
122:3	proceedings	prolonged	protocol	358:21
123:15	131:19	96:9 394:18	27:3, 5	psychiatrist
124:1, 25	process	promised	349:6	63:11
125:1	69:9	138:8	352:10, 21	Public
130:25	174:14	prompted	proud	81:10 84:4
135:14	326:1, 6, 19	236:6	310:20	116:25
139:10	328:10, 14	pronounce	prove	197:13
142:24	330:23	14:12	251:23	488:23
173:3	476:9	propensity	292:1 361:7	490:19
182:21	processes	371:21	proven	publication
205:21	326:14	proper	201:1	36:7 37:2
210:6	327:13	25:23	320:12	40:7 57:14
223:15	330:12	proportion	provide	58:24
229:3	produce	161:2	123:16	127:11
237:14, 17	154:13	196:25	130:23	128:7
254:6	300:13	234:22	143:7	138:20
269:19	433:14, 15	proportions	297:10	140:21
277:17	produced	364:4	310:23	176:11
278:3, 4	145:5	proposal	314:21	253:5
279:24	153:19	427:1, 13	376:5	283:3
331:1, 3	196:8	483:8, 25	392:11	297:22
414:19, 22	300:11, 16	484:16	406:17	314:16, 18
415:15	301:24	propose	459:11	315:24
424:8, 10	produces	192:22	480:25	324:18
434:12	433:16	proposed	481:10	350:21
450:15	producing	152:17	484:20	351:12
462:1, 7	145:11	proposing	provided	380:18
464:23	production	381:25	12:16	386:4, 20
466:3	155:15	proposition	14:24 57:4	387:7, 14
468:18, 20	322:1, 17	163:5	103:6	429:5, 14
469:5, 25	323:3, 13, 16	propounded	provides	484:10
471:4	407:13	490:6	269:11	485:5 486:6
problems	productions	prospective	300:25	publications
61:10	322:3	12:2	301:6	311:3, 24
148:17, 19,	PRODUCTS	331:22	311:23	313:13
20 350:23	1:3 13:11	339:12	315:5	314:8, 12
proceed	163:3	460:21	358:3	publicize
27:22	professional	462:8 464:8	363:6, 7	116:5
108:7	68:18, 22	prostaglandi	394:11	publish
191:3	332:5	n 105:9	providing	18:11 36:3
229:23	professors	PROTECTI	406:13	37:9 47:17
293:3	321:21	VE 1:6	426:15	58:15 68:3

85:13	176:6	407:16	458:21	25 61:7
140:4	182:6	423:12	459:6, 17	73:20, 24, 25
141:13	193:6, 15, 17	424:11	putting	84:20 90:8
148:10	215:1	435:6	77:20	94:14, 19
166:23	218:5	445:17	puzzled	95:16 96:4,
170:16	219:13	448:3	71:25	5, 23 97:2,
212:16	224:23	468:2	p-value	16, 17, 19, 25
224:18	230:5	484:14	212:10	98:5
283:12	232:6, 16	486:24	213:8, 10	100:20
288:2	245:21	publishes	215:25	104:17, 20
310:21	252:13, 15	85:15, 18	216:17, 18	106:4, 10, 11
312:10	254:1	publishing	381:10	107:7
336:24	261:2	312:2 333:3	p-values	121:13
379:25	268:23	PubMed	212:5, 7, 15,	122:6
385:6	269:20	50:19 420:7	16, 19, 23	126:9, 18, 21
386:24	270:1, 16	Puerto 3:7	213:9, 15, 19	128:20
445:15	274:3, 17	pure 393:15		131:25
450:7	281:1	purpose	< Q >	132:14
470:19	285:25	48:2 197:4		133:11
485:10	290:14	PURSUANT	qualifications	134:12, 14,
published	291:22	1:6	225:11	20 137:4
19:3 39:11	295:9	push 98:19	qualified	150:9
40:12	296:22	put 14:10	19:4 425:7,	161:9, 11
45:12	302:5	39:1 50:25	12 445:15	162:8
48:12	305:10	61:3 88:13	qualify	163:9
58:14 59:9,	311:2	131:8	64:14	166:4
13 60:2, 12,	312:15	145:5	quality	167:6
13, 22 61:23	313:3, 8	170:24	102:8	168:22
66:18	316:16	197:8, 10	177:9, 13	172:23
71:21	322:12	233:22	quantifies	180:10, 11
80:17	339:25	238:7	152:25	181:4, 5, 9,
90:24	344:3	271:16	154:22	11, 21 182:5,
121:23	346:7	283:9, 10, 17,	quantity	24 183:24
122:18	349:22	18 325:15	156:1	189:10
146:4, 6	361:9	326:2	160:12	192:2, 6, 8
147:18	373:21	350:3	ques 194:17	193:6
148:13	378:1, 2, 18	380:5	question	194:5
149:6, 9	379:3, 23	390:12	15:4, 5	195:13, 14
151:22	380:1	391:4	22:23, 25	196:17, 19,
164:12	381:15	405:16	23:6 24:12	20 200:4, 8,
169:7	383:11	417:2	28:9 32:10	20, 23, 24
170:8, 9, 12	387:2	422:20	33:10 34:6	201:9
173:23	390:23	424:10	39:6, 8	203:11
174:8	391:1		45:2 51:12,	210:24

215:17, 19	447:10	80:9 84:15	148:22	256:1
217:12	448:18	85:2 87:19	149:18	257:17
218:6, 23	458:4, 24	88:24	158:9	261:15
224:1, 19	471:6	89:11	160:4	262:2
225:9	475:25	90:16	162:6	263:24
228:4	476:4, 18	91:17	163:13	264:19
231:17, 25	477:1, 6, 11,	92:13 94:1,	164:19	268:19
232:21	16, 17 484:2	16 95:3	166:3, 8	271:1
233:2, 6, 13	questioned	97:1, 10, 24	167:5	274:11
234:13	306:8, 10	98:8	168:17	275:1
235:14	questionnaire	100:18	169:14, 24	276:19, 20
239:8	e 98:15, 17	101:12	174:12, 23	277:2
241:6	220:17	103:20	175:11	278:22
247:24	258:8 259:1	104:19	178:19	280:14
248:24	questionnaires	106:20	179:14	281:16
250:22	186:4	107:11	180:5	283:7
259:4	QUESTION	108:5, 11, 23	181:1, 15	284:1, 13, 15,
264:3	S 14:2, 15	109:4	182:22	18 285:1
276:18	15:15 19:6	110:23	183:22	290:1
301:9	21:2 22:2,	112:12, 24	184:10	292:5
305:5	22 23:17	113:14	186:14	293:1, 24
308:16	24:22	115:11	187:12, 23	296:11
313:1, 9, 15	26:20	116:10	188:1, 12, 25	297:14
314:5, 10	27:20 28:2	117:1, 17	189:4, 9	303:24
327:24	32:12 36:4	119:3	191:1, 7	305:21
339:6	38:23	120:6	205:13	308:13, 20
341:17	40:22 42:9,	122:4	207:22	311:9
345:10	19 44:19	124:4	210:7	316:3, 5
355:22	46:7 48:6	125:3, 20	212:2	318:14, 20
367:15	49:15 51:7,	127:2, 21	214:2	319:15
368:12	11, 14, 24	129:7, 17	227:6	321:15, 20
370:22	52:8, 15	131:13, 23	228:8, 13	323:1
371:4	53:1, 16	133:9, 19	229:19	325:16
384:18	55:4, 12	134:1, 17, 18	231:15	328:18
388:12	56:13 58:1,	135:22	235:19	329:13
389:9	16 59:15	136:1, 12	236:21	330:13
399:1	60:4 61:19	137:24	237:22	333:1
402:18	64:16	138:5	238:21	335:6, 23
408:24	65:22	139:1, 8, 23	243:19	337:2, 22
432:1	73:18	140:15	244:21	338:9, 15, 23
434:1	74:11, 15	142:10	245:4, 11	339:7, 22
440:11	75:1, 21	143:1	246:1	340:17
441:3, 15	76:14 78:7,	144:12	253:1	341:6, 11, 18
446:17	17 79:15, 19	145:13	255:8	342:2

343:7, 20	436:16	rabney@wat	311:4	287:18
344:2	437:1		331:20	288:16
345:7, 17	438:6, 11, 18	tsguerra.com	reached	290:8
347:12	439:3	3:5	330:2, 4, 6,	296:25
348:6	441:8	raised	15, 16	297:5, 6
353:8	442:9, 18	323:22	reaching	306:14
354:14	443:1, 13	405:9	71:23	310:24
355:8	444:9, 18		reaction	325:15
359:6	445:5	ramifications	23:25	331:14
360:3, 10	446:15	113:2, 8	121:10	370:17, 19
367:14	447:4	ran 101:15	read 23:5	407:12
368:1	448:1, 10	329:25	31:15	413:8, 18
371:3	450:23	330:3, 5	32:16, 23	424:25
372:11	451:4, 23	range 213:8	33:4 34:21	430:22
374:18	452:14	340:25	36:18 38:9,	437:16
377:10, 17	456:21	421:17	13, 21 48:14,	444:3
379:13	458:3, 9, 23	Raphael	16, 21, 22	450:17
383:1, 6	467:10, 13,	295:2	68:20 73:4	453:9
384:10, 23	22 469:15,	rate 54:14,	94:8	468:16
385:17, 23	18 470:13	15	106:21	489:3 490:4
388:2	472:24	rated 452:6	118:9	reader
389:5	475:2	ratings	122:1	177:8
390:7	478:18, 20,	177:7	124:24	readers
393:24	21 480:20	ratio	131:14, 20	177:12
398:4, 24	481:14	376:13	133:1	reading
400:12	482:2	379:1	136:25	23:4 73:4
402:3, 15	483:6, 22	381:12, 16	152:14	119:21, 23
404:22	487:17	472:23	178:9	131:7, 9
405:21	490:6	473:1	181:14	132:5
408:13, 18	quickly	475:1	189:3	224:2
411:5, 16	60:20	486:5, 9	209:18	261:13
412:19	quiet	ratios 211:7	214:15	271:22
414:3	173:21	RAYNE	249:10, 15	372:13
415:7	187:5	6:19	250:20	403:8
419:14	QUINN	rayne.ellis@a	263:12	426:1
420:2, 21	7:13	rnoldporter.c	264:25	433:23
423:4	quite 128:4	om 6:19	265:22, 23	443:7, 8
425:21	149:9	reach 67:5	267:3	460:8
426:20	438:23	69:16	271:12	reads
428:7	quote/unquot	184:23	272:6	331:19
430:10	e 218:1	185:2	274:21	423:25
431:16		196:15	275:17, 21	ready 27:21
434:8	< R >	200:6	276:21	108:7
435:24		201:7	277:3	119:1

141:10	102:17	330:20, 24	221:4	man.com
191:2	111:15	331:9, 11	226:14	2:6
194:8	116:19, 20	333:5	227:14, 21	rebuttal
214:20	118:20, 24	341:15	234:15	16:4 31:12
229:23	120:22	358:4, 9	236:25	recall 24:23
230:25	127:25	360:7, 23	240:4	28:9, 12
293:3	128:18	361:7, 18	266:6, 12	39:14
368:9	144:9	367:10	267:6	85:22
370:22	151:4	377:20	280:10	108:23
371:5	153:11	380:21	287:14	110:10
386:23	156:24	399:16	314:19	174:13
390:10	157:8, 9	401:20	322:22	191:7
445:7	172:14	415:20	335:16	192:20
real 118:13	174:3, 10	417:2	342:9	277:19
198:22	176:25	419:8, 9	369:18	288:19
210:1	179:2	432:12, 15	455:8 489:5	297:7
216:4 481:1	186:22	433:6	reasonable	317:19
reality	196:5	444:2, 7	96:8	322:14
72:24	199:4, 5	446:12	118:18	340:7
realization	204:18, 23	464:19	168:13	348:15
118:11	206:4	465:17	207:17	352:20
realize 77:8	210:21	468:17	241:2	374:11
148:5	212:1	474:7	391:22	427:24
220:23, 24	213:5	481:24	392:1	442:8
253:24	216:6	483:1 487:2	398:15	445:12
260:2	217:16	Realtime	431:12	451:25
361:22	219:16	1:17 488:2,	reasonably	452:4
realized	223:17, 21	17	47:4 87:6	453:6
16:25	224:1	reask	96:13, 14	458:25
56:25	253:25	106:11	118:16	460:8
124:25	256:17	reason	200:13	462:20
218:5 258:3	257:2	76:20, 24, 25	reasoning	463:9, 10, 23
really 24:6	266:7	108:16	335:20	467:24
25:12 35:4	269:6	120:20	reasons	recalled
58:25 59:4	270:3	141:15	139:14	25:17
60:8, 14	272:21	142:19	207:25	recalling
61:11	278:3	143:5, 6, 7	263:8 400:5	459:23
71:13, 25	300:14	153:15	reassurance	receipt
72:15, 21, 23,	301:7	159:8	269:11	489:15
25 73:5	309:7, 17	161:7	REBECCA	receive
74:18 78:2,	310:3, 16	177:25	2:5	38:20
5 81:21	312:22	183:16	rebecca.king	75:16
83:14 85:6	322:18, 20	195:2, 6	@kellerpost	146:17
92:6	329:6, 7	212:23		

received	82:16	redacted	114:12	221:18
138:21	106:15	322:18	145:16, 19,	298:25
140:18	107:20, 24,	REDIRECT	21 147:16	301:10
146:13	25 108:3	483:5	149:8	302:19
158:22	118:4	Redline	214:13	358:23
177:7	131:6, 9	10:7 38:18	referring	refused
248:5	136:4	247:2	109:6	314:13
435:14	139:19	249:11	112:6	318:8
receiving	145:5	297:15	169:15, 17	refusing
356:4, 13	190:14, 16,	298:1, 9	289:11	315:21
recognize	21, 22, 25	redlines	291:4	regard
108:20	207:24	298:9, 18	367:12	412:21
170:5	229:14, 15,	redo 85:14,	484:11	regarding
175:3	18 237:20	20 142:1	reflect	52:18
214:7	257:8	refer 146:1	114:3	57:17
230:17	292:21, 22,	147:12	131:6	71:17
246:8	25 301:20	reference	175:19	214:13
326:7	347:1, 5, 6, 9	64:6	195:20	regions
347:16	366:22	130:22	207:1, 24	379:5
368:5	375:8	169:21	250:2	Registered
384:14	389:23	241:20	394:21	1:16
393:9	390:2, 3, 6	299:10	395:20	259:12
420:25	392:2, 4	302:21	reflected	488:2, 17
428:13	444:19, 22,	396:1	155:12, 19	regulatory
451:7	23 445:1	411:13, 20,	158:15	64:20 66:10
recollection	463:2	25	206:12	reiterate
68:7, 25	478:10, 12,	referenced	208:7	85:3 291:17
recommenda	13, 16	132:5	216:7	reject
tions 130:24	483:12, 14,	394:6	220:8	170:20
recommende	17, 18, 21	426:23	222:19	177:3
d 211:16	487:18, 21	references	290:21	rejected
374:3	recorded	48:11, 14, 15,	reflective	170:16, 21
recommendi	98:14	17, 20	303:9	172:6, 8, 11
ng 146:10	255:16	181:12, 14	394:18	173:25
178:10	258:17	302:16, 18	reflects	174:19
reconstruct	259:11, 14	303:5	152:20	246:20
384:7	351:23	referencing	153:13	rejection
record 13:2,	records	406:20	165:3	175:18
15 14:10	113:23	referral	167:2	176:15
16:13 26:6,	114:2	146:9	168:10	relate
9, 10, 13, 25	158:20	referrals	169:12	156:25
53:12	257:13, 21	147:2	175:16	related
60:24 75:3	258:4	referred	205:10	36:19
79:14		39:5	206:3, 17	96:14

122:6	359:3	32:1 33:3,	308:16	237:9
192:24	376:9	11, 15, 17	323:3	311:11
266:19	484:24	98:10 324:1	330:1, 24	341:17
291:24	488:10, 11	remains	337:19	408:16
356:15	relatively	269:16	348:20	repeating
371:13	388:18	299:3	350:13, 18	32:9
422:6	389:11	re-mark	352:15, 23	repercussion
424:21	455:7	353:4	359:24	s 143:22
425:12, 13,	release	remarkable	360:6	rephrase
14, 15	299:20	103:3, 12	367:19	22:25
453:22	relevance	218:11	374:1, 5, 15	24:17
RELATES	98:7	219:7, 9	376:17	194:17
1:5 140:3,	relevant	373:6 377:2	377:24	414:25
19 147:22	15:11	remember	385:24	replicate
423:7	182:24	18:6 37:2,	403:8	388:20
relation	186:12	13 39:19, 20	409:24	replied
122:9	192:17	53:4 58:13	414:13	72:17
241:7 425:1	204:22	71:9, 10	437:25	107:9
Relationship	442:12	74:19, 20	438:19	286:24
10:11 36:9	reliable	75:14 76:1	444:8	309:6
39:23	259:17	81:19 83:2,	478:23	replies
50:20	260:12	10, 14, 25	479:4	413:3
68:18, 23	376:5	86:18 89:7,	483:10	reply 72:18
117:21	382:3 441:3	9 104:18	484:2, 9	411:20
119:5	relied 85:9	113:18	485:1, 2	413:4
120:12	154:11, 18	131:24	remembered	replying
122:25	261:4, 18	149:7	224:17	287:2
123:11	265:19	166:13	remind	291:20
124:9	375:17	167:13, 14	30:25	Report
127:13	388:6	171:1	58:12 374:4	10:15
128:8	relief 189:6	174:2, 17, 18,	reminded	11:10
129:20	relies	20 191:18	222:9	15:21, 23, 25
136:15	326:21	210:16, 25	remove	16:4 30:3,
166:18	327:1	223:2	300:18	4, 13, 22, 24
202:16	rely 31:12	224:14	removed	31:11, 12
323:5	32:13 85:8	225:25	194:23	32:20, 21
364:9	212:14	235:14	282:6	33:5, 7, 20
409:3	324:13	254:18	render	40:15
418:22	332:12	255:6	306:4	50:15, 25
439:9, 14	388:3	260:5	rendering	56:1, 5, 8, 11
relationships	449:21	276:21	304:2	57:7, 8
88:18 332:7	455:5	277:3, 5	repeat	58:23 64:6
relative	relying	295:4	138:2, 7	80:17
358:8, 25	31:18, 21	305:5	188:10, 14	91:10 92:2

93:20 94:8, 9 105:1 119:1 131:8 132:6 136:25 137:23 182:10 209:18 221:1 222:15 239:1 243:18 252:8, 17, 24 260:11 261:5, 19 263:1 265:20 277:22 278:20 279:5, 7, 10, 11, 12, 18 290:24 294:14 304:15 322:8 323:12 325:11 347:17 376:9 390:13 392:19, 23 393:11, 12 394:1 397:16 398:14 405:17 407:19 419:24 437:10 441:5 460:7 464:22 476:2	reported 32:19 167:1 169:9 181:17 186:4 217:6 221:2 223:9 225:2 235:6 240:19 361:24 399:12 437:6 439:10 Reporter 1:16, 17, 19, 20 13:16 23:5 488:2, 3, 17, 18, 19, 20, 21, 22 reporting 31:16 56:3 151:13, 23 154:20 218:12 219:3 325:19 370:2 454:3 464:4 reports 16:9, 15 57:5 65:25 81:17 186:11 225:4 239:4 253:11 280:22 455:5 represent 15:17 56:6 203:25	293:10 356:18 representatio n 157:21 225:16 Representati ves 11:11 represented 157:10 158:3 166:11 197:23 291:5 351:11 representing 145:16 203:20 represents 157:17 247:17 300:6 436:7 request 226:6 325:14 requested 56:11 325:4 require 327:17 required 57:9 140:10, 11 314:21 requirements 436:21 requires 129:5 325:10, 12 437:4 research 14:20 47:25 48:1 185:14 242:16	288:5 289:4 292:13 306:13 470:3 researchers 130:1 researching 117:16 residual 403:5 404:4, 14 resounding 205:18 respect 15:3 25:3 28:13 50:5 58:3, 18 69:18 78:6 156:4 164:7 177:8 424:13, 14 426:5 465:20 470:16 responded 77:16 response 120:1 121:1 207:19 208:23 325:23 responsible 430:19 responsive 189:19 rest 17:11 221:6 382:5 450:13 458:20	restart 186:21, 23 resubmit 178:14 result 103:25 183:13 201:21 251:18 252:12 277:21 286:2 318:4 381:19 382:11 423:12 479:17 480:3 481:25 results 17:2 35:10 45:4 123:25 130:10 151:13 156:15 158:18, 24 159:2, 5, 10, 13 162:15 163:22 164:22 188:6 193:9 208:24 218:5 219:13 221:9 227:20 229:6 231:7 243:2 244:3 252:21 253:10, 16 256:24
---	---	--	---	--

265:2, 17	Retrospectiv	36:1, 15, 18	179:10, 18,	RFO 3:6
266:8	e 98:17, 20	37:7 38:7	22 180:4, 13,	rich 440:25
278:21	462:22	45:25	21, 24 181:3,	RICHER
283:12	463:4, 8	47:12, 14	13 191:17	5:15
327:15	return	50:7 99:24	192:22	Rico 3:7
346:7	489:13	105:2	193:25	Rifas-
357:4, 8, 9	returned	122:17, 19	194:3, 10	Shiman
361:20	338:17	129:19	195:16, 24	291:13
364:16	review 31:5,	154:2	196:11	right 14:13
367:8, 13	8 37:1, 8, 22	170:11	201:13	15:25 16:5,
375:9	38:2, 3	211:10, 13	319:4	14 17:11
377:12	43:11 47:9	228:21	320:22	18:19
378:23	49:6, 13	234:11	reviewers	21:16
379:4	52:2 79:17	238:6	175:20	23:21 26:7,
382:9	81:2, 11	241:24	177:18	11 27:10
404:20	89:25	242:14	191:8	29:12, 22
415:12	100:23	245:22	320:19	30:2, 11, 15
417:3	124:2, 22	257:24	449:23	31:22, 24
453:16, 18	128:3	284:9	reviewer's	32:6 33:2,
455:10	136:13	296:21	192:1 200:4	3 34:16, 23
456:18	164:6	297:4	reviewing	36:3, 5
457:18	167:12, 20	299:12	39:21 77:1,	38:7 39:12
460:10, 11	175:11, 13	300:18	2 352:17	41:6, 11
474:4	194:3	321:25	427:24	42:13 44:4
480:22	209:15, 17,	322:3	438:20	48:8 49:18
481:18	20 227:3	324:12	revise 37:22	58:19, 20
482:1, 4, 14,	230:23	327:2	38:16	59:9 61:3
19 485:10,	234:13	332:2	revised	63:2 66:4,
13, 20, 24	235:10	363:24	37:11, 14, 17	6 67:11, 12
486:19, 20	296:24	381:24	170:12	68:8, 12
retained	316:15, 19	384:13	245:22	69:17 77:9,
88:15	339:20	402:8	246:20	25 79:1
115:9	340:13	406:3	274:13	80:21, 25
117:9, 11	345:25	416:16	revising	82:1 87:24
149:12, 21	382:4	429:2	39:21	92:14, 21
150:6, 10, 19	405:2	443:25	revision	99:12
294:1, 9	418:6	451:17	176:20	100:21
435:23, 25	428:2	457:3	revisions	103:8
retainer	429:4, 6	464:7, 19	37:19	106:12
293:6	438:5	466:13	122:22	107:22
retention	450:8	475:23	246:3	108:1, 12
293:20	451:14	484:13	rewrite	109:5, 15
retrospect	reviewed	reviewer	425:10, 11	110:18
463:2	31:7 35:24	39:7, 8		111:8

114:9	227:7	305:11, 22	24 381:5	13, 19, 23, 25
139:20	229:11, 12,	307:7	383:12	453:12
140:4	16 239:12	311:10	386:2, 6	454:2, 5, 16
141:1	244:25	315:17	387:22	455:20
142:2, 12	245:18, 22	316:7	389:7, 25	456:25
143:14	247:2, 7, 18	318:23	390:4	457:18, 25
145:19, 24	248:12	319:23	391:5, 7, 23	460:17
146:11	249:12	320:8	393:20	461:13
147:3, 16	250:19	327:8	400:20	462:14, 18,
148:21	253:3, 7, 20,	333:7	402:23	24 463:5
150:15, 18	22 255:13	334:3	403:10, 25	464:16
151:7, 11	256:2	336:5, 7, 10,	404:5	465:7, 21
154:10	257:11, 18	14, 17, 22	406:3, 13	467:17, 25
158:8, 11	260:7	337:5, 8	407:11	468:5, 13
159:18	262:4	338:1, 4, 18	408:10	469:12, 19
170:25	267:17, 18	339:2, 11	409:4, 9	471:11, 15,
171:8, 19	268:23	340:3, 15, 16,	410:22	22 472:1, 2,
176:5	269:9	21 341:13	411:22, 23	9 473:11, 19,
177:2, 21	270:21	343:8, 9, 10,	413:6, 15, 19	23 474:11,
178:15	271:5, 24	19 344:4, 8	414:12, 22	13, 21
179:15	274:13	345:13	418:15, 22	475:12
181:2, 7, 16,	275:2, 11	346:4	420:14, 17	477:23
20, 22	276:3	347:3, 7	421:3, 6, 10,	478:11, 14
185:22	278:7	348:10, 13	20 424:16	483:15, 19
187:21	279:6	349:1, 9, 16,	426:6, 23	484:10
189:12	281:2	19, 23	427:2	485:2, 7, 19
190:19, 23	283:20	350:25	428:22	487:19
193:23	284:6, 18	354:2, 7, 15	429:5, 23	right-hand
194:25	285:10	356:7, 8, 21,	430:12, 17	364:14
195:5, 17	286:25	25 357:6, 16,	431:3, 4	421:13
197:25	287:3	21 358:12	432:11	473:8, 10
208:4	288:1, 10	359:8, 23	433:25	rigor
210:22	289:10, 14	360:4	435:1	141:20
211:21	290:14	362:16, 21	436:1	333:14
212:4, 20, 23	292:19, 23	363:11, 13,	439:6, 9	rigorous
213:20	293:16	23 368:19,	440:3, 15	464:9
214:10	295:7	24 369:8, 13	441:18	rising
215:3, 8	296:19, 23	370:2, 3, 11	442:5	332:16
216:22	298:2, 11, 18	372:4, 13	444:20, 24	Risk 10:18,
217:2	299:13	373:1, 12, 15,	447:13	22 11:6, 14
219:21	301:3, 5, 14	20 374:11,	448:24	12:9
222:19	302:12	23 375:4	449:1, 8	103:14
224:24	303:22, 23	378:5, 8, 10,	451:12, 24	130:23
226:19	304:11	19 379:20,	452:2, 3, 7,	193:1

231:9, 10	406:18	337:5, 8, 13	satisfied	385:4
233:8, 10, 23	464:25	344:17	243:7	416:9
239:23	ROMANO	345:1	saw 35:9	430:12
304:18, 20	2:8	357:11	53:7, 8	449:21
335:9, 14	room 73:1	358:7, 11, 15	113:9	468:12
358:8	ROSIE 2:8	359:4, 8	136:18	471:21
359:1, 3	rosie.romano	366:2, 3, 12	181:20	says 13:23
364:19	@kellerpost	377:13	256:7	31:1 72:7
375:11	man.com	379:19	258:22, 23,	108:18
376:9	2:9	381:4	24 281:18	120:1
379:1	roughly	383:3	285:5	130:6, 12
381:12, 16	70:5 75:25	387:16, 17	295:15	133:1
382:18	341:7	388:18	322:6	154:10
408:7	Round 3:24	389:10	387:16	195:18
409:8, 11, 18,	row 439:23	478:21	408:6	196:11
19 410:7, 8,	Ruish 291:9	481:7, 16	413:15	201:5
14, 16	rules 22:4	484:8, 22	414:8	223:14
416:10, 19	127:3	485:18, 22,	437:19	248:7
417:7, 10, 21	run 334:8	25 486:7, 9,	469:10	249:17
431:19	432:18	11	saying	253:10
432:18	running	sampled	31:22	255:14
458:16	329:20	368:21	47:22	256:18
468:23	472:16	samples	53:11 79:4	261:3
469:3, 7, 11	rushing	41:9 44:21	92:1 95:1	268:1
470:24, 25	258:9	338:1, 17	107:9	269:10
473:6	RUSS 3:5	339:10, 15,	127:19	275:22
474:18		16 340:8	143:23	284:18
484:24	< S >	344:7	172:25	286:9, 17
486:10	Sacramento	345:12, 20,	197:20	298:20
Rite 8:4	5:3	22, 23 357:6	198:1, 3	299:7, 10, 15,
Riverside	safe 121:6	364:21, 25	247:25	16 301:20
2:10	439:19	368:19	263:15	302:18
Road 5:8	safely	378:3, 6	270:6	303:4
robust	269:14	379:7	280:7, 8	321:2
486:20	sake 75:2	381:15	286:22	333:24
Rock 3:24	sample	SANDRA	288:24, 25	354:11
rocks 157:3	41:13	6:13 175:22	289:2	359:16
ROGER	217:4	sanity 78:2,	291:20	368:22
4:21	276:2, 7	19 321:3	317:20	385:3
roger.smith	280:12, 13,	Santa 4:16	332:19	403:3
@beasleyalle	16 287:23	SARAH	333:11, 13	412:22
n.com 4:21	288:4, 10, 15,	5:13	334:10, 22	413:9
role 58:2	17, 20 289:1,	sat 325:2	358:10	414:20
365:8	2, 3 325:22		376:3	423:11

428:17	scientifically	457:20	426:25	236:25
429:17	97:18, 20	469:11	428:20	247:4, 6, 12
430:6	104:15	scoring	429:16	254:19
431:18	scientist	320:7	448:20	255:4
432:3	19:21, 24	326:22	475:8, 9	261:7
443:15	24:3 47:6	328:2, 20, 25	seconded	262:11
453:6	81:15	329:4	373:9	264:3
459:20	88:21	334:25	section	268:6, 20
464:12	121:18	336:1 388:4	260:24	270:4
465:23	143:10	SEAN 2:15	356:1	280:10
472:22	294:14	search 49:9,	401:12	290:4
scale 28:21	333:15	22, 23 50:18	402:21	297:25
418:12, 18	scientists	52:12 420:7	450:9	299:5, 22
SCARCELL	23:8 87:2	searched	security	302:2, 10
O 3:17	101:14	52:10	116:25	303:22
scenario	356:13	searches	see 30:10	304:14
242:17, 20,	427:4	420:7	52:14 57:6	306:20
25	429:4 436:6	second 25:9	61:15	309:18
school	score	72:3, 6, 7	72:25 73:1,	310:6, 9
19:15 24:9	320:15, 17	86:2 99:20	5, 8 96:20	311:3
43:2 54:17	329:9	102:2	109:14	312:5
55:5, 13	371:21	110:14	110:16	313:13
57:4 63:14,	388:11	151:15, 18	111:24	323:2
16 81:10, 17	408:7	155:20	136:13	325:10
84:4 90:24	412:1	167:10	137:1	331:7
121:3	416:10	168:3, 25	145:1	332:2
427:16	417:7	175:10	148:2	337:1
schooled	454:8	179:18	162:16	342:11
367:6	455:17	189:21	163:23	353:12
SCHULTZ	457:17	194:2	165:15	354:10, 19,
2:9	458:7 469:7	197:22	177:4	21 355:25
science	scored	201:18, 19	178:8	356:3, 7
85:11 86:6	320:1, 13	202:2	179:13	357:4
291:21	scores	247:18, 23	181:21	359:18
356:5	317:21	248:2	183:2	361:18
470:15, 18,	319:8, 22, 24	255:14	192:1	364:3, 8
22	333:25	256:15	193:25	368:14, 16,
Sciences	371:23	261:11	195:3	23 369:7
170:10	384:1	267:25	196:17	374:22
scientific	409:9, 11	309:22	216:13	377:11, 21
33:17	416:19	330:17	218:9	378:6, 15, 16
177:9, 13	417:11, 21	377:18	219:9	382:23
	431:19	388:25	223:14, 15	385:12
		403:13	232:15	387:16

389:12, 14	138:19	256:21	327:7, 12	sex 454:4
390:24	139:2	257:6 367:7	329:15	456:6, 11, 16,
391:12	152:24	sent 172:9	396:3	23 457:7, 17,
394:8	153:22, 25	174:2	separately	25
400:16	154:21	285:9, 10, 16	132:7	Sex-specific
415:4	159:21	413:5	September	11:22
416:6, 8	160:9	sentence	40:8 371:18	Shanna
424:18	162:11	191:18, 20,	series	150:9
428:16	163:14, 19	21 194:6	237:22	SHANNON
429:16	165:13, 18	195:18	serious	8:16
431:23	167:25	217:21	25:19 61:11	share 89:23
434:22	169:1	248:7	seriously	shared
437:17	240:14	253:9	178:6	89:20 226:2
438:22	374:19	255:14	404:11	sharing
439:14	400:25	260:25	SERVICES	89:21
441:25	455:25	261:11	1:21 8:21	shed 419:10
442:4, 5, 20	selection	267:25	13:4	sheet 489:6,
448:19, 22	325:16	269:2, 5, 7	session	9, 11, 14
450:2	selective	271:4, 7, 15,	293:5	490:7
451:18	325:18	23 272:1, 7	set 38:21	Sherbrooke
453:25	selectors	274:12, 16,	96:6, 7	44:22
454:9	69:10	23 275:4	110:9, 11	62:12, 15
455:13, 17	self-report	289:6	193:5	63:11
457:13	377:6	300:23	197:4, 5, 17	258:5, 23
459:24	self-reported	359:16	198:2	259:16
460:4	375:2, 17, 19	375:15	372:6, 10	339:10
464:10	433:1	377:19	379:6	shoes 39:1
465:3, 4, 19	443:19	388:17, 25	411:16	shoot
471:9, 17	send 59:5	390:21	485:9 488:8	170:19, 23
472:6, 18	70:1 78:14	403:13	setting	172:1
473:4, 7	150:14	426:10	314:24	shop 147:12
474:19	senior	431:18	settled	Shorthand
475:5 478:4	428:24	459:20	93:24	1:18 488:3,
seeing	sense 96:11	460:2	seven 52:23	18, 19, 20
72:23	97:18 98:6	sentences	189:1	shot 171:22
352:20	104:16	261:1	301:22	172:5
405:12	249:24	263:12	302:1	show 20:13
462:11	274:23	271:16	403:22	21:21
seek 230:1	345:6	274:9	461:10	22:13, 15, 18
seen 46:5	sensitive	275:7, 17	476:23	25:14 49:9
53:3, 6	353:17	360:19	severe	59:25
66:8	sensitivity	Separate	272:16	137:1, 2
118:19	195:11	160:6	sewers	141:14
129:9	210:9	187:18	197:14	153:23

155:6, 23	252:20, 21	244:4, 6, 11	473:14	368:13
162:12	255:19	432:14	474:11	384:19
163:20	263:8	433:11, 19	significant	simply
181:24	302:18	siblings	211:6, 10	327:16
235:25	369:23	244:7	213:17	single 99:21
252:12, 13	387:18, 21	432:16, 17	215:7, 12, 20	128:15
254:11, 12	444:14	sic 177:4	216:14	132:14, 16
279:22	455:25	196:24	225:4	133:12, 16
309:9	459:8	259:4	364:16, 19	134:2, 10
310:4	shows 27:4	265:12	381:17	136:6
320:25	28:16	269:25	457:18	137:7
335:1, 5	45:12	282:22	458:6, 17	197:21
342:15	128:22	324:23	459:2, 6	213:16
343:2	129:4	side 76:6	472:9	305:23
346:12	169:9	77:8	473:11, 16	317:22
349:18	184:25	115:25	475:6, 7	328:25
376:22	206:9	116:1	480:2, 23	359:16, 21
379:8	244:4, 11	140:2	481:17	360:14
381:10	248:20	264:23	482:6, 15	399:14
433:11	252:15, 19	294:8	significantly	426:16
460:12	253:15, 25	319:12	255:17	sir 362:11
468:17	272:4	364:14	signing	sit 15:19
469:1	275:14	406:24	489:9	80:1
479:24	306:18	475:4	similar	165:18
480:9, 14, 18	361:19	sign 318:6,	125:10, 17,	192:20
481:13	376:8	16 489:8	18 180:10	199:24
482:25	395:5	signal	194:11	367:18
484:15, 16	409:11, 21	262:10	223:22	371:12
showed	410:10, 17	482:25	233:16	431:8
195:15	412:8	485:16	244:8	sits 142:3
215:7	416:17, 21	signatory	307:25	sitting
364:16	417:3, 9, 12	48:8	326:14	28:11 30:2
376:9	456:10	signed	327:13	44:3 50:6
377:4	457:8, 9	56:16	329:21	75:3 87:20
387:18	476:13, 16	89:13	430:1	100:3
466:9	480:2, 7, 10	127:10	432:16	112:25
480:22	SHUSTER	262:4	472:3	150:17
481:17	3:9	268:22	473:7	167:24
showing	sibling	293:11	474:18, 20	228:17
26:21 46:4	244:9	294:5	475:1	230:15
152:19	432:4, 14	significance	485:20	232:22
369:19	433:8	211:2, 16, 20	486:3	254:22
shown	sibling-	219:11	simple	430:11
233:23	control		196:22	

situation	288:5, 10, 15,	235:2	snapshot	105:25
109:9	17, 20 289:1,	270:6	300:25	106:6, 8, 12,
123:7	2, 3 325:22	273:4	301:6	19 107:3, 19
197:3	337:5, 8, 13	280:11	394:12	109:2
199:20	344:18	289:2	SNIDOW	110:19
223:1	345:1	300:15	2:3 9:6	112:9, 23
317:11	357:11	348:17	14:11, 14, 16,	113:4
331:15	358:8, 11, 15	358:11	23 15:13	114:24
350:1	359:4, 8	377:13	18:20 20:3	116:6, 14
374:6	366:2, 3, 12	379:19	21:17	117:5, 23
437:13	382:22	381:4	22:11, 17	119:8
441:20	383:3	388:18	24:13 25:7	120:16, 19
six 17:2, 3,	387:16, 17	389:11	26:1, 14	123:3
4 52:17, 24	388:19	417:9	27:15, 19, 24	124:12
53:2	389:10	422:3	32:3, 7	125:7
153:14, 16	413:13	423:2, 15	35:15 40:1	126:16, 20,
165:8	478:22	433:3	42:5, 15	24 127:16
168:10	481:7	455:7	44:5 45:8	128:10
169:12	484:8, 22	480:1, 22	46:15, 18, 21	129:13
185:17	485:22, 25	481:9, 11, 16,	49:1 50:11	131:11, 16
189:4	486:7, 9, 11	25 482:4, 5,	51:13, 18, 22	132:10
196:9	sizes 481:16	14, 23	52:5, 19	133:14, 22
208:5	sjohnston@b	smaller	53:10	134:5, 22
225:25	tlaw.com	44:17	54:24 55:8,	135:3, 12, 17
248:15, 17,	5:13	234:21	16 57:19	136:8
21 249:3, 19,	sketch 83:13	279:19	58:9 59:10,	137:9
23 250:1, 2,	skew 159:13	290:7	19 61:4	138:3, 24
10 301:21	sko@btlaw.c	358:15	64:8 65:13,	139:3, 15, 22
302:1	om 6:14	359:4, 9, 11	19 73:12	140:5
338:17	slate 251:24	417:17	74:5, 14	142:6, 13
400:2	sliced	484:17	75:9 76:7	144:7
451:10	440:10, 13	485:22, 23	77:10	147:25
467:24	slide 226:3	486:5	78:21	149:14
468:7	slides 12:13	smallest	79:13 80:5	158:5
479:7, 15	slightly	432:21	84:9 87:15	159:25
sixth	157:18	smart 51:10	88:7 89:5	160:13
155:12	206:19	373:7	90:9, 12	163:10
365:18	472:8	smartest	91:7, 23	164:3
size 41:13	slowly	41:3	93:16 94:6,	165:21
216:13	153:19, 20	SMITH	21 95:19	166:5, 20
217:4	small 16:16,	4:21 8:1	97:8, 12	168:5
276:3, 8	22 28:24	smoke 126:3	98:2 100:7	169:4
280:12, 13,	193:5	Smoking	101:4, 19	172:19
16 287:23	206:4	126:1, 5, 8	104:2, 7	173:5, 8, 16,

19 178:16	311:6	22 397:5	483:2, 11	158:22
180:7	313:17, 21	398:11	487:18	160:2, 24
182:3	314:6	399:7	so-called	161:5
183:8	315:16, 22	401:18, 23	64:7, 13, 15	169:10
184:6, 8	316:4	404:6	213:17	178:20
185:7	318:9, 17	408:11, 15	societies	184:8
187:2, 6, 13,	319:13	411:1, 9	332:5	191:14
16, 19, 22	321:11	413:23	Society	193:1
188:1, 8, 21	322:13	414:2, 23	83:9	195:25
189:7, 23	328:4, 23	418:23	115:16, 22	204:20
190:7, 18	329:18	419:21	116:3	215:9
207:10	332:23	422:11	434:20	223:20
209:11	334:4	424:17	software	225:8
211:22	335:12	426:7	372:18, 19,	231:5, 11, 13,
226:20	336:23	429:24	21	14 232:20
228:1, 5	337:16	431:5	solid 141:11	249:13
229:9	338:5, 13, 19	434:3	solidified	255:22
235:17	339:3, 18	435:10	117:10	266:10
236:15	340:10, 22	436:2, 23	somebody	278:3
238:1, 9, 16,	341:10, 14,	438:2, 14, 17	140:1	285:12
19 243:10	21 342:7, 14	439:1	149:2 295:6	292:13
244:17	343:1, 5, 8,	440:18, 21	someone's	298:10, 12
245:1, 9	16, 19, 25	442:6, 16, 23	97:22	302:13
252:5	344:9	443:3, 6, 10	soon 60:9	309:6
255:1, 22, 25	345:15	444:1, 19	142:23	319:5
257:16	346:11	445:3	188:20	343:16
261:9, 12, 23,	353:3	446:6, 18	sor 65:10	346:5
25 263:20	354:22, 25	447:14	sorry 17:3	347:22
264:4, 7, 11	355:3, 7	451:3, 21	25:8 42:15	356:23
268:12, 15,	358:13	455:21	46:18, 19	367:3
17 270:23	360:1, 5	458:1, 8, 12	55:11	370:4
274:5, 19	366:23	466:6, 24	65:10, 13	385:7
276:14, 25	370:23	467:12	73:19 75:9	389:1, 21
278:12	371:1, 7	469:13, 17	83:12	391:24
280:5	375:22, 25	470:7	90:17	393:4
281:7	377:15	472:11, 18	97:19	396:14
282:14	378:20	474:14	104:7, 14	413:23
284:11, 17,	381:6	475:21	126:19	417:24
25 289:16,	383:4, 13	476:20	127:1	421:22
23 291:15	384:21	477:2, 5, 10,	130:2	438:14
292:9, 16, 18	385:7, 12, 20	18, 23 478:6,	146:22	440:21, 22
305:15	387:23	18 480:20	151:8	443:23, 24
307:8	388:23	481:14	152:7	466:6
308:17	389:1, 4, 18,	482:2	156:21	471:16

472:19, 21	speaking	15, 17 67:18	379:9, 10	121:10, 24,
474:3	71:10, 14	69:8 82:8,	380:23, 24	25 122:2
483:11	85:22	9, 10 83:8,	398:23	124:20, 22
sound	396:21	19, 21 84:25	402:9	145:1
466:19	speaks	86:3 90:3	442:7	150:23
sounds	111:14	110:2	477:15, 24	151:1
25:11	150:1	260:14	standard	217:10
172:15	special	294:2, 12, 18	333:14	242:19, 24
173:10	183:21	spoken 64:1,	334:12	324:20
358:11	189:17	5 67:13	401:11	325:2, 8
sour 172:15	specialty	69:2, 3	standardizati	331:4
173:10	174:9	82:25	on 370:10	373:3
source	specific	83:16 84:7,	standards	433:22
258:13, 14	101:24	21	212:22	starting
259:15	168:23	Sporadic	332:17	47:1 118:7
260:4	181:17	452:9, 17	standing	319:25
sources	189:13	454:8	26:17	419:17
241:20	190:2	455:16	27:16	starts 42:24
258:4	265:11	457:19	133:12	96:5, 21
South 7:19	272:11	spot 320:15	134:3	403:16
8:2, 12	363:12	363:6	136:14	state 26:25
	385:15	St 4:10	399:10	27:1 86:5
SOUTHERN	440:11	stable	404:16	203:8
1:1	specifically	455:11	stands	398:15
SOVIK 8:1	21:5 83:2	staff 176:2	94:15 455:8	489:5
space	90:21	stage	start 46:23	stated 476:1
334:23	169:2	116:12, 18	60:7	statement
489:6	185:23	stages 95:24	153:18	64:7, 11, 12,
spaced	340:14	stakes 254:1	196:8	19, 24 65:1,
439:24	specify	stand 34:9	251:8, 23, 24	2, 8, 24 66:2,
SPALDING	247:25	61:18	313:11	9, 18, 24
7:1, 5 8:16	Spectrum	104:13	338:7	67:4, 9
speak 62:13	10:15	227:14	455:9, 10	68:3, 5, 8
63:19 68:2	11:15 12:7,	265:24	456:5	119:23, 24
71:2, 4	9 453:14	269:1, 2	started	120:2
75:18	471:10	274:15	17:22 18:2	127:11
82:15, 16	spent	275:6	19:20, 24	133:21, 25
84:12	316:20	276:11	40:10	142:16
148:8	spits 310:15	281:25	45:15, 20, 23	149:5, 7
313:18	splitting	303:16	46:12	248:4
321:21	363:18	324:4	56:17 60:6	262:20
427:9	364:1	360:19	63:23	264:1
speaker	spoke 62:22,	366:16	105:13	267:2, 12, 13
116:20	25 63:8, 13,	376:21	118:9	270:17

303:14	stenographic	Stores-PNS	262:20	154:1, 6, 20
316:15	13:15	8:14	382:16	155:2
318:7	stenographic	stracey@trac	431:22	156:7
395:8	ally 488:7	eylawfirm.co	433:20	159:21
397:10	step 188:10,	m 2:15	482:1	162:11, 20
424:24, 25	11 310:5	stragglers	stronger	163:19
425:6, 18, 20	331:6	43:19	379:4	192:20
426:13	Stergiakouli	straightforw	418:13, 19	193:8, 16
443:14	71:24 72:5,	ard 304:17	439:8, 16	206:9
461:16	13 75:7	strata 157:8	strongest	209:19
statements	130:12	streams	182:14	210:5
66:16	265:5	392:7	456:2, 3	233:9, 17
128:2	276:24	Street 1:13	strongly	234:9
129:24	291:9	2:16, 23	136:21	235:3, 25
STATES	299:6, 15	4:22 5:21	206:12	243:8, 13
1:1 42:23	406:16, 21	6:14, 21	stuck 71:11	244:6
43:9, 14	408:8	7:14, 19	student	252:19
62:20	409:7, 10, 13,	8:2, 7, 12	40:24 41:2	262:22
138:22	21, 25 411:4,	13:8	134:14	263:15
322:1	12, 18, 23, 24	strength	135:20	265:3, 8
statistical	416:16, 24	128:23	177:23	266:18
211:2, 16, 19	419:15	280:18	372:20	268:4
219:10	468:16	382:21	students	270:10, 11,
371:14	Stergiakouli'	446:11	41:3 81:8	12, 20
473:13	s 299:11	strengths	studied	271:20
474:10	STERN	366:17	44:4, 22	276:12
statistically	6:20	375:6	92:3, 19	277:17
211:6	stock 113:2	stress 105:7	166:10, 16	278:2, 4, 16,
213:17	STONE 8:6	240:8, 15, 19,	233:8 299:4	24 279:5, 9
216:14	49:17, 19	24 241:6	studies 10:3	280:22
364:19	stones 47:7	strict 272:16	36:15 46:3,	289:9, 13
458:6, 17	stood 159:5	strictly	9 50:23	290:9, 12, 20,
459:2	274:15	396:21	52:17	25 291:2, 3,
473:11, 16	361:9	strong 50:2	80:18 98:9,	25 292:2
475:6	stop 25:15,	59:1 60:12	11, 24 99:24	308:9, 10
480:2, 23	25 65:21	61:12	100:4	310:24
481:17	139:18	103:11	101:7, 23	311:2, 15, 17
482:5, 15	173:7	119:13, 17	132:5	326:22
statistics	203:20	123:22	133:17	330:9
486:1	stopping	128:5	134:10	331:13
status 22:9	80:4	155:6	136:20	332:1
176:21	stored	202:20	137:1, 2, 18	337:8
177:11	184:19	216:10, 15	151:20	358:16
	Stores 7:10	254:9	153:3, 22	359:1

360:9, 21	20 28:14, 24	21 270:6	432:4, 21, 22	subjective
366:17	29:3, 6, 12,	271:19	433:2, 3, 6,	320:6, 10
373:1	18, 23 30:23	273:4, 7	11 437:15	331:17
374:8, 9	35:19, 22	276:22	440:16	subjects
377:4	40:10 41:9,	277:12	441:10	28:25
388:19	15 43:16, 24	280:9, 18	443:15	41:14
391:16, 21	44:10, 16, 17,	286:8	450:9, 14	43:13
397:18	23 66:22	287:22	451:25	146:7
399:11	81:20	288:10	453:17	255:15
402:12, 16	99:25	289:1	454:18	265:12
403:23	100:12	290:14	455:7	363:21
408:25	101:8	296:18, 23	456:14, 17	365:5, 12, 19
411:14	130:9	328:19	457:21, 23	366:8
413:22	132:14, 16,	339:12	458:13	367:7
414:4	18 133:6, 12	340:9	460:5	396:15
421:17	134:2	345:24	461:18, 22	455:3
427:23	136:7, 11, 20	350:6, 25	464:16, 18	486:16
429:19	137:7, 12, 14	351:1	465:24	submissions
430:23	140:18	354:6	473:13, 17	177:6
432:13	151:5, 12, 16	356:20	474:8	submit
433:9, 19	152:5, 6, 10,	357:1	479:2, 6, 9,	138:9
435:7	11, 14 154:9	359:4, 17, 22	11, 15, 17, 23	449:23
439:22	156:4	360:14	480:1, 8	submitted
440:5, 24	160:9, 10, 22	361:6, 12, 17,	481:9, 11, 12	16:4 58:22
449:3	161:8	19 365:4, 10	484:12, 18,	274:17
451:11	162:1	366:16, 18	19 485:11	435:19
454:14	164:6	372:22	studying	Subscribed
455:2, 5	165:16	373:12, 13,	23:12	490:15
457:6, 7	167:4	19, 23	185:15	subset
459:16	168:1	374:13	267:3, 4, 6	44:16
460:20	180:15, 17,	375:6, 16	271:13	348:17
462:2, 9	19, 25	376:16	281:21	350:5
463:21, 24	192:14, 24	382:14	361:22	351:7
464:7	193:5, 13	386:15	stuff 281:22	365:16
467:25	201:8	390:20	353:2	377:25
480:12, 17,	203:2	400:19	Subcommitte	473:20
22 481:16,	213:16, 22	401:5, 7	e 11:11	484:12
19 482:4, 5,	217:9, 10, 14	402:15	subgroups	485:14
14, 24	244:4, 11, 14	403:2, 4, 19	455:10	substance
Study 9:14,	247:20	408:10	subject	16:2
22 12:10	248:24	414:4	140:20	248:11
21:20, 24	252:15, 16	421:3	146:5	490:7
22:15, 16	265:3, 8, 12	427:21	405:15	substantial
25:12 26:3,	269:11, 13,	428:1, 14	489:10	432:6

substantive 16:20	SUGNET 8:1	supporting 63:25	225:9	326:10
	Suite 2:10,	165:24	236:8	327:14
substantively 15:24	16 3:6, 18,	273:24	238:5	387:13
substrate 166:1	24 4:4, 9, 16	361:25	243:1	487:9
202:19	5:2, 8, 16, 21	386:16	261:16	surprising 479:18
sucks 141:17	6:2, 14 8:2	supportive 136:21	266:7	480:3
suddenly 416:21	SULLIVAN 3:12	supposed 57:7	292:17	surveillance 269:15
sufficient 291:25	summary 30:16, 21, 23	225:22	303:2, 15	
359:17, 22	129:25	374:2 410:7	318:12	susceptibility 93:7, 8
360:14	summer 8:16	Sure 16:19	319:6	103:10
suggest 315:25	sun 48:3	17:13	323:19	susceptible 91:5, 11, 15,
335:22	supervised 427:4, 19	20:20 23:2	330:19	16 92:5, 9,
409:1	supervising 437:8	24:1 32:11	331:3	25 93:4, 21
423:6	supervision 427:7 428:4	33:24	333:18	103:1
430:23	supervisor 354:7	34:21	336:19	107:15
486:12	355:10, 19,	35:21 36:2	339:6, 8	suspected 481:10
suggested 116:24	20, 23	39:18	341:23	swallows 156:20
146:1	428:25	43:17, 21	349:25	Swan 150:10
236:18	supervisors 355:14	48:19 56:1,	350:3, 9, 10	sway 156:14
349:13	supplement 372:3	8, 9 59:13,	351:25	swear 13:17
suggesting 102:13, 20	Supplementa ry 11:1	16, 25 71:12	352:9	sweet 363:6
264:1	368:6	77:15, 24	369:18	switching 289:17
307:20	support 34:4 35:20	78:1, 3, 9, 10,	370:1	sworn 13:21
421:18	70:23	83:8	374:5, 14	488:4
432:7	253:10	85:12 87:6	381:9	490:15
suggestion 102:20	269:21	89:3, 18	406:15	symptomolog y 125:22
238:12	273:8, 12, 14	92:14	407:17	126:11
suggestions 297:11	275:14, 22	123:21	408:19	363:22
suggestive 459:7	302:16	124:7	410:1	symptoms 12:7 126:5
suggests 429:19	449:2, 9	149:20	411:22	265:10
	459:12	150:24	427:9	365:6 366:9
		151:3	430:5	syndrome 239:18
		152:8	436:13	
		160:5	449:22, 24	
		167:22	452:24	
		172:10	461:15, 25	
		194:18	468:1	
		210:17	476:10	
		214:8	surprise 480:16	
		223:21	surprised 45:18	
		224:1	224:13	
			286:15	

syndromes	112:2	463:13	Takser 63:8,	346:5
239:12, 14	121:12	464:20	10 83:3, 5	366:2, 25
Syracuse	134:24	466:4	258:3	415:13
8:3	135:23	taken 100:6	talk 22:5	418:9
system 56:3	142:23	101:11	63:23	421:24
105:9, 11	157:25	102:1	70:16, 18	422:1
systematic	161:15	142:22	141:22	426:12
49:6, 21, 23	169:25	181:24	188:25	444:6
50:18	177:24, 25	183:5	201:2, 3	462:9, 15
	178:1, 3, 5	184:2, 12, 18	218:22	477:9 479:1
< T >	179:17	201:17, 19	317:4	talks 336:8
table 17:8	188:21	217:6, 12, 17,	347:1	409:7, 8, 10
291:18	194:2	20 224:4	374:3	TALLEY
325:20	196:14	226:23	403:25	5:1
331:8, 9	197:13	227:9	418:7	Target 7:16
364:15	200:6	228:18	talked 62:8,	107:16
368:10, 11	201:7	234:24	14, 19 63:3,	267:9
369:23	202:1, 3, 4, 8,	254:5	5 70:17	targeted
371:5	17 210:21	259:7	81:24, 25	427:25
372:2, 7, 20	220:18	291:23	150:4	taught
451:19	222:3, 6, 8,	323:12	275:10	19:14, 15
453:15, 19	14 234:15,	346:14	281:2	149:25
471:9	16, 19, 21	388:17	404:1 418:2	150:3
475:18	237:13, 15,	397:23	talking 21:4,	tcampbell@k
477:19	16 244:24	398:20	7, 12, 19, 22	rauseandkins
478:2	245:6	399:25	22:13, 14	man.com
tables 17:1	262:9	400:1, 10	25:12	4:3
136:25	267:20	441:12	43:13	teacher
141:13, 21,	268:25	454:22	67:10	150:2
22, 24, 25	274:24	459:23	78:23	251:19
252:20	281:24	488:7	105:13	teachers
273:18, 21,	283:22	takes 20:24	126:24	24:8
23 310:7, 9	287:22	146:10	167:25	team 17:23
325:11, 15	343:12, 15	156:13	183:19	20:10 38:1
331:5, 18, 19	391:24	197:21	191:11	62:12
372:17	400:6, 8	199:13	193:3, 14, 19	82:14, 23
tailored	402:24, 25	200:24	230:20	317:20, 24
308:8	404:2, 11	202:1	238:4	319:8, 11
take 15:4	409:20	205:3, 6	245:13	333:25
30:5 59:24	410:8, 16, 18	300:12	253:18, 21	373:5 428:3
67:11 88:4	412:13	329:6	262:15	teams
99:10	417:22	399:2	264:16	317:24
100:21	444:17	416:19	290:11	teamwork
106:5, 16	451:19	470:25	318:7	37:24, 25

technique	217:3	tens 414:16,	35:2 42:11	268:16, 18
461:21	218:20	17 480:13	91:20	313:5
462:4	219:6	teratologist	93:11 99:7	353:2
techniques	222:4	90:20	120:10	354:17
151:23, 24	229:6	teratology	132:4, 6	369:4, 10
152:1, 2	236:2	90:22	157:16	375:25
telephone	239:1	105:14, 15	166:15	389:21
38:19	251:25	121:9	201:17, 24	414:2
144:19	264:25	terminate	220:7	438:17
375:18	313:23, 25	79:11	222:16	483:2
tell 13:22	314:1	terms 52:12	223:5	Thanks
16:18	319:21	111:2	226:17	15:7 30:9
17:13	360:18	303:9	242:7	261:12
24:20	384:6, 16	382:21, 22	279:25	268:15
25:24	400:23	396:7	288:21	292:18
38:25 44:8	402:1	454:14, 15	303:3	355:7
50:14	404:25	terrible	329:14	theoretical
56:19 61:2	415:8	63:7 83:7	387:9	271:6, 7
62:24	423:14	test 33:1	423:25	303:14
64:19	441:22	162:23	424:16	theoretically
76:20, 24	444:5	453:14	436:22	300:5
86:19, 20	445:25	484:19	439:4	theory
87:9, 12	446:4	tested	441:9 488:7	271:8
89:4 99:10	447:11, 19,	160:24, 25	Texas 1:18	therapeutic
102:5	22 461:3	248:11	2:16 3:24	197:18
104:16	467:18	testified	488:20	198:5
113:15, 19	471:3	19:20 42:2	textbook	thereof 50:8
116:12	474:1 487:3	44:7 49:17	130:20	thesis
117:3	telling 44:3	68:11	211:17	373:15
119:2	79:6	80:15	Thank 14:8	thing 27:11
132:3	405:25	110:6	17:14	30:10
135:8	414:7	124:5	27:19	71:22
144:23	448:23	166:9	92:17	189:5
145:6	tells 305:1	194:20	106:19	266:14, 17
146:14	ten 43:16	284:24	107:17, 19	287:21
147:11	343:23	340:19	108:4	289:3
157:1	461:4	396:24	138:1	323:14
163:17	tend 321:21	testify 79:6	145:14	366:3
167:21	tends	488:4	187:19	377:1
172:5	206:22	testifying	229:22	480:15
177:15, 23	tenet 165:1	33:2 486:2,	231:14	things
181:16	Tennessee	4	255:25	16:16, 22
204:21	115:17	testimony	261:25	17:10 22:6
212:24		32:6, 24	262:1	33:25 34:2

35:5 70:25	97:22 98:6	219:13	340:19	211:19
71:24	100:20	227:21	350:15	466:2
101:2	105:14	228:7	360:17	third 102:2
104:11, 12,	106:14	233:4	365:8	194:5
15 128:14	109:8	237:20	372:1, 19	197:22
173:1	119:11	240:10, 21	373:9, 21, 22	201:18, 20
187:25	123:18	241:23	375:7, 13	247:17, 20,
238:13	126:21, 23	247:8	376:7, 8	23 248:1, 2
239:2	127:18	250:7	387:3	255:11
287:18	128:13	251:10, 22	388:1	356:13
298:20	130:6	254:6	394:17	359:15
304:1	131:2	257:10	398:2	377:19
321:24	135:3, 6	262:15	401:15	386:25
336:9, 14	142:19	265:25	402:8, 13	387:5
337:3	143:2	266:22	405:16	475:9, 10, 11
344:4, 22	145:10	268:11	406:21	thirty
354:20	148:2	278:23	407:12	489:15
362:13	149:20	279:16	409:6, 7	Thompson
372:15	150:5	281:3	417:16	265:5
390:18	152:13	282:1, 15	420:18	276:24
407:9	157:24	283:1	422:16	291:8
408:5	160:23	284:12	425:23	THORNBUR
455:13	162:8	288:7, 15	429:15, 25	G 5:9, 20
463:11	166:7	289:4, 18	434:19	6:1, 4, 13
478:25	171:6, 17, 20	293:15	437:16	thorough
think 20:16	172:4	294:6	438:8	470:2
24:11, 20	176:24	295:18	445:17	thoroughly
26:1 36:17	177:14	302:22, 25	450:9	382:4
38:25	180:13, 24	305:11	451:3	thought
40:15, 18, 20	182:24	308:21	452:3	20:23, 25
48:4 49:12	183:16	309:5	460:6	34:25
52:3 53:5	186:15	311:7	463:16	35:19 45:5
59:1, 6	189:3, 5	312:4	465:22	51:18, 22
61:6 62:22	190:10	313:1	466:8, 11	52:23
64:14 66:1	195:23	314:1, 2	467:1	72:21 73:2,
67:12, 15, 19	198:6	316:1, 14	470:17	7 79:22
69:8 70:20	199:12	319:20	476:13, 20	90:14
71:4 78:4,	204:22	320:3, 9	484:3, 11	114:22
23 79:14	206:25	322:15, 24	thinking	118:4
80:14, 20, 25	207:14	327:23	24:7 379:12	189:11
84:22	208:10	330:10	thinks	194:20
88:11, 12	210:13	332:16	79:18	222:7, 22
93:23	211:24	333:19	189:20, 25	224:5
96:22	212:12	335:15, 16		232:17

247:21	452:5, 18, 23	153:20, 24	282:11, 17	424:23
254:20, 21	453:4	154:8, 23, 25	283:2, 22	430:21
278:25	461:4, 10	163:16	285:19, 24	435:18
279:1, 4, 17	473:22	165:3, 6	290:16	441:1
309:7	threshold	168:24	292:8, 19, 23	442:11
315:1	57:1	172:12	301:6, 11	444:20, 24
317:14	thresholds	175:6	302:12	448:6
321:13	56:20	181:25	303:7, 10, 17	456:8, 24
353:13, 17	time 13:6	183:5	304:10, 12	462:6, 23, 24
426:2	18:1 19:7,	184:2, 13	307:22	464:4
443:24	23 20:6	188:5	309:8, 20	467:15
468:12	21:9, 12	189:22	310:2, 21	468:11
thousand-	22:5, 20	190:10, 19,	315:17, 21	472:17
milligram	23:18, 22	23 191:22	316:11, 20,	476:21, 22
202:4	24:5 25:17	194:14, 24	25 321:19	478:7, 11, 14
thousands	26:7, 11, 18	195:4	324:17	483:15, 19
29:5	29:1 35:6,	197:22	330:18	484:10
262:22	12, 18 36:7,	200:17	342:13, 25	487:19
480:13, 14	14, 18 38:21	203:22	343:11, 24	488:8
three 17:4	39:11, 21	205:8	347:3, 7	timeliness
37:18, 20	41:20 45:5,	206:16, 21	348:16	177:9, 14
50:4 59:4	15, 23 56:15	209:1	349:21	times 16:24
118:5	57:8 61:17	210:22	351:17	27:5 37:17
142:16	67:3 68:25	216:10	352:14	40:16
175:20	70:4, 14	219:14	360:24	55:22
176:1	71:2, 15	224:4, 9	361:13, 15,	82:11
177:15, 17	74:1, 2	226:13	21 362:24	118:20
221:25	86:17 88:6,	229:12, 16	363:1	119:12
263:12	16 89:14, 25	234:12	382:8	135:13
267:19	90:4 91:4,	236:20, 24	383:19	156:7
277:7	21 106:16	237:9, 19	386:3	160:11
297:1	107:22	240:23	387:1, 6	162:14, 17
310:9	108:1	248:19	389:25	163:21, 24
314:3	112:18	249:20	390:4	167:1
317:9	114:6	256:10	394:12, 16	185:21
318:2	117:19	262:7	396:8	214:13
355:14	121:22, 23	266:11	398:8, 9, 22	282:10, 16
361:1	122:1	267:5	399:3, 4, 22	297:1, 3
362:15	124:15, 20,	270:15	400:1, 7, 8	305:8
364:1	23, 24 127:9	272:24	401:4	308:2
376:12	128:6	273:8, 11	413:8, 16	314:3
408:1	144:10, 15	276:7	416:15	317:24
437:21, 23	145:3, 22	278:9, 24, 25	419:25	318:3
443:18	149:13, 22	281:5	420:4	359:9, 10

437:21, 22, 23 443:18, 20 463:25 473:22 timing 12:1 69:17 207:16 tiny 206:3 tissue 186:2 192:16 199:7 361:23 tissues 182:16 title 246:13 422:23 titled 420:11 tobacco 163:3 today 13:12, 16 14:23 15:20 16:8 22:1, 10, 21 28:11 48:21, 23 49:14 50:7 75:3 87:21 95:7 98:7 113:1 132:17 142:3 150:17 157:1 163:5 165:18 188:3 199:24 213:5, 7 223:6 228:17 230:15 232:22 242:19 243:2	254:23 266:4 267:11 273:12, 14 275:5 276:4, 5 285:6 288:20 289:5 295:1 350:12, 16 361:5 367:18 371:12 380:23, 24 397:1 403:22 405:5 422:6 423:23 430:11, 22 431:8 442:8 463:3 483:7 Today's 13:5 told 69:14, 21, 25 76:25 77:2 86:24 87:4 89:3, 8 95:7 111:20 113:13 115:1 146:8 147:2 177:20, 22 223:2, 18 260:8 265:25 275:3, 9 283:11 342:20 406:23	415:22, 24 427:10 457:24 469:16 tomorrow 60:7 tool 305:4 306:12, 16, 17 307:5, 17 309:15 310:15 320:23 tools 392:9 top 69:22, 23, 24 70:2 255:11 337:19 413:25 428:16 448:19 topic 67:6 225:20 Toro- Rodriguez 291:10, 11 total 344:18 350:15 381:2 432:24 440:2 totality 402:16 toxic 183:15 226:15 305:24, 25 toxicant 91:5 95:8, 17, 22, 25 105:21 167:18 toxics 91:1 92:11	95:13, 14 96:2 447:3 toxicity 275:15 Toxicological 170:10 toxicologist 199:6, 8 Toxicology 83:9 115:16, 23 116:4 154:19 168:15 170:10 176:7 182:11 317:11, 17 434:20 446:24 TRACEY 2:13, 15 307:12 train 90:21 trained 121:19 408:3 446:10, 20, 23, 24 474:1 training 90:20 124:17 251:21 446:12 transcript 34:24 301:17 426:2 488:7 489:16, 17 transcription 490:5	transcripts 31:5 transmitted 410:4 transparency 232:5 309:16 310:17, 23 311:23 312:18 314:23 315:3 327:17 333:14, 17 transparent 61:13 69:6 305:3 306:14 307:1 309:24 319:19 327:21 328:12 333:10 334:19 transparentl y 141:13 trap 77:20 trapped 156:24 157:10 164:11 196:7 249:4 traps 156:9 195:25 206:16 treated 299:19 300:13 Tree 6:22 trend 364:3 triaged
---	---	--	--	--

50:25	242:21, 23	126:13	tweeted	363:19
TRICIA 4:3	245:3	140:4	281:25	373:14
tried 21:14	251:25	171:23	282:3	376:12
116:18	256:2	252:2	285:20	400:2
170:24	278:5	264:9	286:7	406:17
tries 258:11	302:15	345:10	tweets	411:12, 19
trigger	326:23	347:22	281:6	427:4, 18, 19
104:23	327:10	365:15	285:18, 19	432:13
107:1	333:7, 11	416:13	twice 95:7	449:16
triggered	365:4	419:6	Twitter	452:18
124:16	366:11	turn 111:17	9:25 281:1	455:18
trimester	377:9	193:23	283:8, 13, 14,	463:7
100:17	395:13	250:13	17 284:3	474:2, 7, 17,
102:1	409:22	255:9, 10	287:17, 18	25 485:13
155:20	433:16	264:20	two 16:4	Tylenol
167:10	440:19, 23	271:21	17:2 30:2	10:1 13:10
168:3, 25	457:10	280:20	37:19	19:15
197:22	479:21	298:4	40:18 50:3	20:23 24:7
201:20	480:11	347:19	55:23	87:14
202:2	trust 24:8	359:12	56:14, 23	92:10, 16
247:18, 21	37:25 38:1	368:8	71:21 72:2	110:17
464:3	59:14	384:24	77:4 78:4,	111:2, 10, 14
475:5, 8, 9,	85:12 436:9	389:16	10 94:3	112:8, 14
10, 11	truth 13:22,	390:15	104:10	121:4
trimesters	23 19:18	391:7	118:5	141:17
101:24	77:2	421:8	125:15	145:18
440:6, 7	104:16	448:15	128:14	148:13
452:18	447:19	471:7	155:24	161:15
455:19	488:5	turned	156:13	206:5
475:14	try 23:7, 10	52:13	175:20	210:11
TRINH	38:24 39:2	182:19	228:12	218:21
8:11	60:25	293:6	258:3	225:5
Tronnes	116:11	295:15	259:1	234:15, 16,
291:12	136:3	tweet 9:25	275:24	19, 21, 23
true 64:23	183:23	282:2, 7	285:15	235:4, 12
103:9, 14	200:2	283:23	297:1, 3	249:1, 3, 4
120:3	251:23	285:10, 14,	302:23	251:11, 13
124:19	343:21	16, 23, 24	303:4	267:9
140:7	398:5	286:22	327:12	277:20
146:12	trying	287:20	329:19, 20	278:5
167:3	80:16	290:6, 10	330:11	409:14, 20
193:10	84:19	291:4, 23	344:22	410:5, 9, 16,
199:24	94:25	292:8	352:24	19 463:3, 7,
237:8	104:12		362:15, 19	14 468:24

469:1, 6	487:13	20 454:10	178:17	351:9, 14
471:1		471:8, 12	182:23	358:6
type 35:5, 7	< U >	480:24	183:19	365:13
58:13	Uh-huh	UK 72:13,	186:15	369:18
78:18 93:5	28:7 30:12	14 411:14	187:24	372:19
156:3	110:15	412:2	195:24	378:25
166:2	111:19, 23	ultimately	199:13	381:22
182:14	112:21	378:18	203:5	386:10, 17
192:21	160:8	379:23	205:1	403:21
202:16, 19	162:10	umbrellas	208:19	408:6, 25
213:21	175:2	422:20	209:1	419:10
217:21	179:23	unable	212:6	423:24
225:20, 21	194:1, 7	403:4	217:21	425:23
232:4	196:18	404:3	220:18	433:18, 22
258:22	211:3	459:21	222:5	442:3, 13
267:7	214:24	uncertain	225:9, 18	446:10
281:21	241:9	36:13	232:21	457:5
286:20	245:23	uncommon	234:14	461:23
312:7	247:11	300:6	239:25	470:1
330:9	250:15	underestimat	248:16	473:15
370:6	255:12, 20	e 375:11	250:1	478:1
402:12	260:23	underestimat	259:5	485:21
441:6 447:2	264:22, 24	ing 278:5	266:22	487:5
types 93:6	284:4	underpowere	269:3, 24, 25	understandin
391:20	293:8, 21	d 479:16, 24	273:19	g 78:15
426:19	297:20	understand	276:17	119:14, 18
typical	298:3, 7, 19	34:7 35:7	279:22	133:10
147:10	301:2	43:23	280:16	162:8, 25
233:9	304:5	47:16	282:16	223:22
301:10, 12	308:15	55:20 62:2	288:14	276:17
typically	316:8	72:9, 15	290:23	290:11
37:18	340:6	74:17 77:3,	292:15	371:11
38:22	344:5	23 94:12	296:7	Understood
66:15	359:13	110:24	318:1	70:3 75:22
199:8	368:15	111:1, 4, 25	320:9	77:25
204:16	372:24	113:1	327:9	120:9
212:13	390:17	124:7	331:14	170:22
233:23	391:18	125:10	333:11	303:15
297:2	403:17	131:18	339:6	undertaken
319:8	418:14	132:21	341:16	284:19
422:15	421:11	143:22	344:17	unexposed
462:25	428:12	145:2	345:8	219:4
464:1	448:17	154:1, 3	347:24	365:11
	452:8, 10, 12,	161:14, 24	349:20	396:19

unfortunatel y 269:23 285:22 350:22 372:3 487:1	377:13 379:18, 24 381:3 383:3 unsure 88:10	191:12, 22 198:5 207:1 221:5 243:5 252:14 258:15, 21 259:18, 19 260:19 261:18 275:18, 19 279:10 280:22 298:21 301:10, 12 304:15, 16, 23 305:6, 18 306:12 307:20 308:5 309:10 310:1 312:12, 21 314:19 320:22 326:6 327:14 328:1 333:8 336:19 352:3 358:14 372:17, 18 375:2, 19 379:12 394:13, 18, 22 395:2 396:7 401:1 411:25 412:3 416:12 418:10 429:18	431:20 432:9, 17 437:20 439:5, 7, 13 440:15 443:16 454:8 455:16, 18 457:19 458:10 460:8 462:3 463:1, 18, 24 464:4 users 442:21 uses 171:12 204:12 361:17 386:15 usual 304:22 usually 41:23 62:25 72:18 99:4 147:11 171:10 203:17 220:19 233:10 266:24 269:3 296:25 297:3 306:22 309:10 319:11 334:7, 13 387:15 435:18 Utero 9:18 11:13 39:24 45:7 119:6	120:12 122:25 127:14 128:8 129:10 253:12 424:5 utilized 41:10 158:13 304:3 306:3 309:2 311:3, 15, 16 utilizing 41:9 < V > valid 183:15 195:15 203:9 217:22 218:6, 25 219:14 224:21 464:20 validated 265:14 validity 218:23 valproic 241:17 valuable 358:2 value 276:9 474:9 valued 144:10 Vanderbilt 5:8 variables 369:20, 22 370:2
unilateral 287:10 unit 81:18 UNITED 1:1 42:23 43:9, 14 62:19 138:22 322:1 units 300:12 432:23 484:20 universe 270:10 272:14 312:8 380:7 University 54:18 57:4 68:17 69:5, 7 72:20 unmeasured 299:2 403:6 404:4 432:4, 7 464:12 unpack 123:6, 7 unplanned 115:25 unpower 479:16 unpublished 80:13 unrelated 22:6 unreliable 260:9	untreated 234:1, 7 235:22 236:11 237:5, 22 Untreating 234:3 unturned 47:7 49:18, 19 unusual 72:2, 18 331:25 333:15 update 56:24 updated 56:16 upset 177:24 179:4 283:5 465:17 usage 9:21 203:25 Use 10:1, 13 12:1, 2, 6, 7 78:19 96:9 101:17 152:18 154:14 161:2 162:25 181:12, 18 182:10 184:22 185:19 186:5			

371:24	view 32:19	want 14:9	227:17	468:14
372:1	437:3 471:5	16:13 22:3,	228:2, 23	469:20
461:25	views 116:5	12, 18 24:17	230:18	470:2
variety	211:1	26:2 27:10	231:1	474:8
392:9	436:18	32:5 33:6	245:12	475:17
vary 375:4,	VINH 5:2	35:3 46:22	251:12, 13,	477:10, 14
20	violated	56:19 57:6,	17, 20 262:8	478:9
verbally	27:5	9 58:25	263:11	wanted
71:4	virtual	59:4, 23	264:13	35:20 47:7
verbatim	317:8	60:8, 9	266:11	69:12, 13
488:7	visit 317:8	68:1 77:1	273:20	72:23 77:3,
verify 85:10	Vlenterie	78:10, 14	278:14	24 78:1, 2, 9
242:22	265:5	82:5 85:3,	283:11, 21	86:8, 9, 23
versa	276:24	12 89:18	289:8, 17	87:1 88:21
329:24	291:6	92:14 98:5,	290:19	146:2
version	volume	19 102:3, 8,	303:13, 25	147:8
10:21	206:22	11 106:3	307:22	148:5
58:23	vouch	113:6	313:10	159:15, 16
354:11, 16	450:13	124:7	315:6, 25	189:11
versus	vulnerable	132:1	320:18	223:17, 21,
168:24	102:18	135:14, 17	323:8	25 238:5
201:14	105:19	154:13	327:22	239:16
363:18	397:11	156:12	332:10	251:15, 16
vice 329:24		161:24	339:24	280:17
video 13:7	< W >	167:19	341:24	302:10
VIDEOGRA		172:16, 23	342:4, 6, 14	303:11, 15
PHER 13:1,	WAGSTAFF	173:9	343:13	315:1
3 26:7, 11	3:17	177:23	346:13, 17	346:15
107:22	Wait 343:16	185:9	353:1, 3	383:9
108:1	waited	186:22	358:1, 17	406:15
190:13, 19,	379:6	187:25	364:10	407:17
23 229:12,	waiting	188:24	369:17	420:1
16 231:11	386:21	189:17	370:19	476:3
292:19, 23	waived 15:1	190:13	385:5	485:11
347:3, 7	wake 282:3	194:2	389:18	wants 57:1
389:25	Walgreen	199:21	401:20	74:13
390:4	6:10	202:10, 11	405:2, 14	145:6
444:20, 24	Walgreens	203:13	423:24	199:7
476:23	6:10	204:21	424:20	346:11
478:9, 14	Walmart	207:13, 24	426:1	ward 258:2
483:15, 19	7:9	210:17, 19,	444:11	warning
487:19	Wal-Mart	21 212:24	454:25	79:10
Videotaped	7:10	213:11	455:1	warranted
1:11		217:14	457:12	

269:17	256:18	weaker	462:3, 4	327:10
wash 460:10	287:17	382:21	weird 71:20	337:23
Washington	308:24	weakness	welcome	339:16
5:22 6:15	310:5, 16	223:11, 15	108:6	354:10
7:8 316:18	312:19	weaknesses	229:20	355:6
waste 22:5	314:2	289:8	293:2	363:21
wasted	315:8, 12	290:19, 24	390:9	370:25
343:23	320:13	291:1 292:2	445:6	373:12, 14
wasting	323:9, 13	wealth	469:22	378:4
315:20	325:1	440:9	well 19:4	385:4
343:11	326:17, 18	website	31:22	401:21
water	327:19	241:20	33:14	408:23
197:13	334:17	336:4, 6, 8	60:14	414:20
Watt 5:2	335:1, 2	week 100:4	62:24 63:2	424:1
WATTS	352:24	281:15	64:17	426:22
3:1, 3, 4	361:15	284:9 287:3	67:20 69:1	429:7
wave 44:11	371:23	weeks 16:4	72:9 73:7	430:11
way 16:22	396:12, 13	55:23	79:24	437:17
18:8 20:10,	407:18	56:14, 23	90:15	439:4
19 30:8	411:17	59:4 63:22	91:19	440:13
40:4, 14	412:6	99:3, 20, 21	106:8	443:4, 6, 14
60:12 69:1	425:11	100:15, 22	111:17	444:8
70:6 96:18,	428:21	153:7	112:17	448:11
19 98:22	436:11	191:23	113:15	453:24
99:19	440:10, 14	397:12	135:15	457:1
102:3	441:3	451:16	139:13, 25	460:15
135:24	442:13	464:1, 2	142:11	467:16
140:19	456:8	weighed	146:8	473:10
141:6, 12	461:1, 2	371:22	171:6, 17	476:17
143:8	466:18	weight	172:1	477:2, 22
144:25	469:8	130:7	173:13	482:11
150:1	487:7, 8, 14	422:2	174:13	well-
155:9	ways	423:2	187:17	accepted
160:22	160:20	425:14, 15	237:17	154:16
161:20	287:19	482:6, 9	238:11	168:15
182:16	310:11	weighted	249:5	185:13
193:4	369:21	157:13, 18	250:1	well-
197:4	384:2	weighting	269:8	behaved
199:1	392:5, 6	370:8	282:23	342:9
201:11	weak	371:20	286:16	well-crafted
202:25	278:24	461:20	292:15	73:6
234:12	412:23	weights	307:12	well-
243:4	416:21	372:5, 7, 8	319:22	delineated
244:1, 7	433:4		321:18	132:24

well-	67:10 79:3,	464:24	35:18 40:4	128:13
documented	9 80:4	466:17	42:7 44:8	129:15
73:6	133:10	When's	45:11	131:18
well-	161:17	175:6	46:17, 20, 24	132:13
established	180:11	Wholesale	49:4 50:13	133:16, 24
105:20	183:19	6:16	52:10, 21	134:8
202:18	188:23	wide 248:8	53:13 55:1,	135:19
206:18	190:16	widespread	10, 21 57:22	136:10
well-	194:22	429:17	58:11	137:11
informed	210:22	WILLIAM	59:12 61:9	139:5
90:6	222:11	5:1	64:10	140:7
well-known	238:12	willing	65:18	142:8, 15
68:19	243:2	146:25	73:14	144:9
107:14	246:2	window	74:18	148:2
184:16	249:2	91:11	75:13	149:16
185:18	253:21	93:22	76:10	158:7
well-	260:20	103:1, 9, 18,	77:13 80:8	160:2, 15
powered	262:14	24 104:22	84:12	163:12
479:8	264:16	105:15	87:17	164:5
well-	267:4	106:25	88:10 89:7	165:23
presented	284:13	107:7, 10	90:11, 14	166:7, 22
225:16	289:14	248:8, 10	91:9 92:1	168:7
well-	293:17	249:3	93:19 94:7,	169:7
qualified	335:24	476:12	24 95:21	172:25
62:2	346:25	windows	97:15 98:4	173:22
well-	363:18	105:16	100:10	178:17
represented	396:2	WISC-IV	101:7, 22	180:9
226:10	450:24	265:13	104:5, 10	182:4
went 20:10	476:21, 23	wish 118:1	107:6	183:9
50:24	483:20	180:23	108:4	184:7
81:23	West 6:21	196:4	110:21	185:9
115:19	7:14 70:20	245:17	112:10	188:9
258:23	we've 106:1	262:20	113:6	207:11
275:8	135:6	270:4	115:1	209:12
281:1	284:12	wisterniles	116:8, 17	211:24
290:7	289:18	377:3	117:7	226:21
397:12	whatsoever	withhold	118:1	231:13
429:14	256:25	350:8	119:11	235:18
485:4	257:2	witness	120:18, 25	236:17
486:6	275:15	13:18	123:6	238:3
487:11	404:16	15:10, 14	124:14	243:11
we're 21:25	409:23	18:24 20:6	125:9	244:18
22:9 25:20	417:12	23:7 24:19	126:19, 22	245:2, 10
43:12		26:19 28:1	127:1, 18	252:7

255:3, 24	378:21	woken	234:15, 16,	Woodruff
261:21	381:8	282:5	18, 20 235:2	307:13
262:1	383:15	woman	237:13, 14	316:7, 10, 11,
263:22	385:14	96:20	248:25	21, 23, 24
264:13	387:25	102:4	249:2	317:3, 5, 6, 8,
268:16, 18	389:3, 20	196:14	256:23	20 318:6
274:7, 21	397:7	197:20	257:5	Woodruff's
276:16	398:13	200:5, 15	258:8	324:17
278:14	399:9	201:6, 20	259:1	word 274:2
280:6	401:25	202:1	269:13	314:17
281:13	404:8	236:12	277:19	341:16
282:15	408:16	244:15, 22	301:11, 12	359:15
291:16	411:2, 11	258:17	339:13	404:2
292:11	414:25	399:2	394:19	worded
305:16	418:24	401:12	395:1, 14	262:19
307:10	419:23	402:20	398:20	words 36:6
308:18	422:13	womb 91:13	399:12, 14,	38:13 69:3
311:7	424:18	women	24 400:6, 7	78:19
314:14	426:9	19:16	409:17	244:22
318:11, 19	429:25	98:25	410:8, 14	249:10, 14
321:13	431:7	101:11, 16	412:11	262:4
322:14	434:5, 15	102:17	416:18	265:24
328:5, 24	435:12	121:6	417:20, 21,	269:8
329:19	436:4	158:21, 24	23 437:20	288:4
332:24	438:4, 16	159:3, 5, 6,	438:23	289:10
334:6	440:19, 23	10 160:23	441:5	313:13
335:13	442:7, 25	161:2, 15, 25	442:20	314:10
336:24	443:11	162:25	443:16	359:18
337:18	444:2	183:12	460:22	360:4, 13
338:6, 21	446:8, 20	195:7	461:9, 12, 23	361:10
339:5, 19	447:16	196:23, 25	462:10	376:22
340:12, 23	455:23	200:24	463:17	393:19
341:15, 23	458:13	201:3	468:21	418:15
342:19, 23	466:8	202:17, 21	469:2	421:20
343:18	467:1, 4, 8	210:10, 12	470:23	424:11
344:11	470:9	217:5	471:1	work 17:22
346:17, 24	472:21	218:1, 12	wonderful	18:16 19:1
353:6	474:16	219:2, 9, 23	150:1	35:5, 6
358:14	475:23	220:4, 9, 19,	416:14	40:10 46:9
360:6	478:3	22, 24	wondering	47:2, 18
366:24	480:6	221:14, 18,	449:15	54:6, 9
371:9	481:5, 23	21 222:1, 2,	Woodland	55:2 57:16
376:2	482:18	6, 8 223:8	8:8	58:5, 7, 17
377:16	489:1	227:19		70:24 81:2,

<i>11</i> 83:20	223:13, 23	275:9	worth 20:9	65:11
88:13 90:5	230:3	356:18	168:10	123:17
121:11	231:24	423:25	249:19	144:1
124:24	242:25	470:17	270:2	267:12
130:4	254:14	471:2	302:19	282:9, 10
132:20	295:7	worried	386:22	320:12
138:23	305:16	134:15	write 65:3	328:20
140:3	318:13	139:12	73:7 78:6	329:4, 10
145:1	323:7	159:12, 16,	139:6	335:17
150:23	331:21	18, 19 199:8,	251:16	352:13
151:1	392:15	10, 19	269:4	363:17
156:18	408:1	244:24	274:14	369:14
177:6	working	380:10	278:18, 20	372:21
178:5	40:9 57:22	381:24	287:18	385:3
179:5, 7	58:21 60:6	395:8, 9	361:4	391:8
205:4	63:22 76:5,	405:9	392:22	415:17
230:1	21 77:8, 14	415:18, 23	410:25	432:12
231:25	80:11	416:3	425:17	486:10
232:6, 13, 15,	82:13	418:11	430:15	wrote 40:15,
16 242:19	86:15, 24, 25	456:23	461:14	20 66:21
244:2, 14	87:10 88:1	457:1	writes	91:9 94:9
293:9	111:21	466:12	66:16	95:2
294:7	114:8, 14, 16,	worries	411:3	129:24
306:2	19 115:6, 10	178:22	437:10	239:1
307:14	124:15	worry	writing	243:18
309:3, 21	145:23	127:7	80:21, 23	252:8
317:10, 16	223:19	177:21, 22	407:6	267:5, 19
323:6	294:3, 22	178:11, 18,	449:2, 5	274:12
324:21	309:23	21, 24 179:4	482:12	277:22
325:8	316:15	184:21	written	282:16, 20
333:9	406:14, 24	240:24, 25	15:20	285:25
356:15	434:17, 21	242:21	142:15	287:14
392:13, 18	435:4	312:6	248:5	289:6
407:5	works	321:7	267:13	290:18
424:20	58:14	322:21	275:5	302:12, 15
446:13	68:22	335:24	287:5, 7	303:8
447:1, 7	80:13	354:4	361:3	307:14
449:9 470:3	81:15	474:9	367:21	325:5
worked	135:25	476:11	383:23	375:14
47:8 65:25	355:17	worrying	422:14	397:16
109:18	world 34:1	413:10	424:22	398:14, 23
138:16	64:12	worst-case	425:20	407:19
141:8	172:11	242:17, 20,	wrong 21:1	411:17
217:8	187:10	25	61:15, 17	415:9

421:14	259:25	449:11	344:15	Zeyan
430:20	260:19	451:8	349:4	67:19, 20
433:20	264:7	454:1, 12	361:1, 2	68:12 73:4,
	268:8, 17	458:24	376:12	7 405:7
< X >	272:8	459:10	397:13	ZOOM 2:5,
Xenobiotics	273:22	465:5	400:2	6, 7, 8, 9, 15,
300:24	277:6	467:1, 9	408:1	20, 22 3:3,
301:21	281:4	472:5	461:4, 10	11, 12, 17, 23
X-rays	284:25	473:2, 3	471:14, 18,	4:3, 8, 14, 15,
96:19	285:7	477:23	20, 23, 25	21 5:1, 2, 7,
	286:16	484:6	Yep 40:25	15, 20 6:1, 7,
< Y >	288:9, 22	487:4, 15	107:21	13, 19, 20
Yale 68:22	290:5	year 39:15,	145:20	7:1, 7, 12, 13,
69:15 70:1	293:16	16 41:19	179:21	18 8:1, 6, 11,
Yeah 17:25	295:12, 14,	53:11 76:3	214:21	16
30:3 39:17	16 298:19	83:9 86:13	267:23	
46:20	301:7	119:15, 22	287:1, 4	
52:24 53:7,	305:6, 12	132:25	374:21	
22 56:23	313:21	173:22	391:15	
71:13	321:23	283:22	yes/no	
73:22 76:4,	322:4, 5	406:12	358:4	
11 86:14	330:18	462:17	432:24	
99:13	338:10	463:14	yesterday	
106:18	346:16	years 41:17	222:22	
109:17	347:18, 21	42:25 43:9,	463:7	
122:15	351:15	16 44:13	YORK 1:1,	
136:2	352:19	70:8 118:5	14 2:24	
144:14	353:2, 9, 23	133:8	3:13 6:8,	
152:1, 13	354:21	142:16	21 7:3, 15	
159:17	355:3	149:25	8:3 13:9	
162:7	359:21	150:3, 4	70:19	
170:18	362:11	154:19	197:13	
179:25	370:9	157:2, 4	young 373:6	
180:3	373:25	162:21	Ystrom	
190:15	385:10, 13,	185:14	130:9	
193:21	14 388:23	217:11	265:5	
196:20	389:3, 8, 12,	226:1	276:24	
214:19	24 390:14,	267:19	291:6	
216:5	25 391:25	270:2		
225:24	400:17	277:7, 8	< Z >	
227:17	406:10	308:3	zero 59:16,	
246:9	413:7	316:12	25 213:11	
247:3, 14	431:25	317:9, 12	273:25	
253:8	432:12	339:14	412:17, 18	